

P-W

Gen. Petro. - Greager #11-6
SW/4-NW/4 Sec 6-Twp 19N-R 23E 9-28
Navajo County

9-25

County Navajo

Area _____

Lease No. _____

Well

Name General Petro Corporation Creager-State #14-6

Location SW SW NW c 6 Twp 19N Range 23E Footage 329 & 348 E of W corner
per GP rpt = 2970 fsl + 330 fwl

Elev _____ Gr 5720 ^{DE} Spud _____ Completed _____ Total 3492 TD
Date 12-17-48 Abandon 2-17-49 Depth 3493
Approx. 3432

Contractor: _____ Cost \$ _____

Casing Size Depth Cement

20" 12' _____

13 3/8 775 5975X

Drilled by Rotary X
Cable Tool _____

Production Horizon _____

Initial Production D&A

REMARKS (Took 23 cores: See file)

Elec. _____
Logs Elec.
Applic _____ Plugging _____ Completion _____
to Plug _____ Record _____ Report _____

Sample Log AM Strat
Sample Descrip. X
Sample Set 1-8 P-124
Cores _____

Water well - accepted by _____

Bond Co. _____
& No. Bond Fund Indemnity L-67862

Bond Am't \$ 1,000.00 Cancelled 12-1-49 Date _____
Organization Report _____

Filing Receipt _____ Dated _____ Well Book _____ Plat Book _____
Loc. Plat _____ Dedication _____

API # 02-017-05005

PERMIT NUMBER none Date Issued _____

9-28

322 Plaza Estival
San Clemente, CA. 92672

December 22, 1999

E. B. Heylman
4028 E. Blacklidge #14
Tucson, AZ. 85712

file #11 9-28

Dear Ed,

You could have requested something on which I had data. I have very little and the Mobil office the well folders are in is unknown. From memory:

General Petroleum acquired a large land block put together by George Creager and Dorsey Hager. Hager had mapped the area with a plane table and located a structural high. The high was where we drilled. After the dry hole a seismic study was conducted which depicted a large nose plunging to the west from the Defiance Uplift. Closure could not be mapped with the data obtained.

The drilling rig was new. Straight from the 1948 oil show in Tulsa. Owned by Kellogg Drilling Co, Bakersfield, California. No longer in business. Good well trained rews from the San Joaquin Valley. Nothing unusual in the operation. Water was hauled from Holbrook. During drilling a bentonite mud was used which was converted to a salt base after encountering salt in the Supai formation

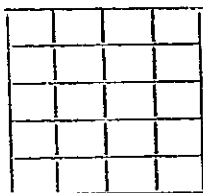
The well was programed for 10,000 feet as I remember, however Hager had doubled up on formation names. He had Leadville and Hermosa in his well program. I checked with Buzz Brown about the additional section and estimated a maximum total depth of 5000 feet. Basement, biotite granite, was encountered at 3347 feet. Total depth 3,347 feet. The well was logged at 795 feet and again at total depth. Casing, 13 3/8" set at 795 feet with 600 sax cement. Top Coconino: 1,127 feet, Supai at 1,590 feet. The well was plugged to 1,513 feet and turned over to a rancher in the area named Jones for conversion into a water well. I believe the water from the Coconino was brackish. Jones was required to conduct further abandonment procedures if the water well was not completed.

Your friend Mozart gets all his money from the Bass Straits operation where Lewis Weeks took royalty instead of fees for his work with Broker Hill Prop. Anita worked for the firm in Connecticut that does the legal work for Weeks Petroleum. Anyway they are making good use of the dollars.

Regards,

Bob Smart

Bob

Locate well
correctly

ARIZONA STATE LAND DEPARTMENT

Lease or Arizona
Permit No. OF 44404

Log of Oil or Gas Well

Company GENERAL PETROLEUM CORPORATION Address 612 S. Flower St.,
Los Angeles (14) California

Lessor or Tract Creager-State Field _____

Well No. 14-6 Section 6 Township 19N Range 23E

Meridian S.R. B&M County Navajo

Location 330 feet (N) of South Line and 330 feet (E) of West Line of N 1/4 Corner of Section

Elevation 5720 (Derrick floor relative to sea level).

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed S. C. Brown
Date March 28, 1949 Title Agent
By: F. L. Wadsworth Chief Petroleum Engineer

The summary on this page is for the condition of the well at above date.
Commenced drilling December 17, 1948 Finished drilling February 17, 1949

OIL OR GAS SANDS OR ZONES (Denote Gas By G)

No. 1, from _____ to _____ No. 4, from _____ to _____
No. 2, from _____ to _____ No. 5, from _____ to _____
No. 3, from _____ to _____ No. 6, from _____ to _____

IMPORTANT WATER SANDS

No. 1, from 270 to 290 No. 3, from _____ to _____
No. 2, from 573 to 647 No. 4, from _____ to _____

CASING RECORD

Size Casing	Weight per Foot	Threads per Inch	Make	Amount	Kind of Shoe	Cut and Pooled From	Perforated		Purpose
							From	To	
<u>20"</u>				<u>12'</u>					
<u>13-3/8"</u>	<u>544</u>		<u>J-55</u>	<u>775'</u>					

MUDDING AND CEMENTING RECORD

Size Casing	Where Set	Number of Sacks of Cement	Method Used	Mud Gravity	Amount of Mud Used
<u>20"</u>	<u>12'</u>				
<u>13-3/8"</u>	<u>775'</u>	<u>597</u>			

PLUGS AND ADAPTERS

Heaving plug—Material _____ Length _____ Plug _____ Depth set 1493
Adapters—Material _____ Size _____

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0 44404

SHOOTING RECORD

Size	Shell Used	Explosive Used	Quantity	Date	Depth Shot	Depth Cleaned Out

TOOLS USED

Rotary tools were used from 0 feet to 3432 feet, and from feet to feet
 Cable tools were used from feet to feet, and from feet to feet

DATES

Put to producing
 The production for the first 24 hours was fluid, of which percent was ,
 per cent was emulsion, per cent water, and sediment.
 Gravity Deg. Be.
 If gas well, cubic feet per 24 hours Gallons gasoline per 1,000 cubic feet of gas
 Rock pressure, pounds per square inch

EMPLOYEES:

 , Driller , Driller
 , Driller , Driller

FORMATION RECORD

From	To	Total Feet	Formation

Approved:

GENERAL PETROLEUM CORPORATION

Company

Date

By

Title

612 S. Flower St., Los Angeles 14, California

Address

HISTORY OF OIL OR GAS WELL

It is of the greatest importance to have a complete history of the well. Please state in detail the dates of redrilling, together with the reasons for the work and its results. If there were any changes made in the casing, state fully, and if any casing was "sidetracked" or left in the well, give size and location. If the well has been dynamited, give size, date, position, and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position, and results of pumping or bailing.

(See attached history)

06 # 9-28

Operator: General Petroleum Corporation
Well No: Creager-State #14-6
Location: 329' N & 348' E of W $\frac{1}{4}$ corner - Sec. 6-T19N-R23E
Navajo County, Arizona
Elevation: 5720' (derrick floor)
Spud: December 17, 1948 Abandoned: February 17, 1949
TOTAL DEPTH: 3432' Plugged Depth: 1493'
Junk: none

Geological Markers

Top Chinle	10'
Top Shinarump	595'
Top Moenkopie	674'
Top Kaibab	1124'
Top Coconino	1127'
Top Supai	1590'
Top Granite	3353'

Casing Record

20" set at 12'
13-3/8" set at 775' with 597 sax

Electric Log Depths: Surface to 3432'

Operator GENERAL PETROLEUM CORPORATION: Field Navajo County (Ariz)
Well No. Creager State 14-6 Sec. 6, T 19 N, R 23 E, G & S R B & M
Signed Silas Brown
Date March 29, 1949 Title Agent

This well was drilled by K.L. Kellogg and Sons, Drilling contractors, using rotary equipment.

All measurements were taken from the kelly bushing 19.9' above the cellar wall.

1948

DRILLING AN EXPLORATORY WELL

11-29

to Rotary equipment was moved in and rigged up.

12-17

12-18 17-1/2" hole was spudded December 17, 1948, and drilled to 795', circulation having been lost and regained at 647' and 785'.

12-26

12-27 a Schlumberger electric log was run from 140' to 795'.

to

12-29 CEMENTING 13-3/8" CASING AT 795'

13-3/8" O.D., new, 54#, J-55, short T&C casing was cemented at 795' with 530 sax of El Toro construction cement, the 1st 300 sax being mixed with 3% Aquagel. Return circulation was spotty. (Mixing time 42 minutes, displacing time 30 minutes slurry weight not recorded, final pressure 300#. Finished at 11:55 A.M. by Halliburton cementers.) 66 sax of cement was pumped in around the outside of the 13-3/8" casing, bringing cement to the surface.

The casing was landed in the cellar and the drilling control head installed. The casing was tested with 600# for 15 minutes. O.K.

12-30
to
2/5/49

12- $\frac{1}{4}$ " hole was drilled and spot cored 795'/1320' and 11" hole drilled and spot cored 1320'/3432'. Circulation was lost and regained while drilling at 1100', 1136', 1498', 1307', 1570', 1633', 1655', and 2633'. No showings of oil or gas worthy of a test were encountered.

2-6 &
2-7

A Schlumberger electric log was run 795'/3432'.

ABANDONING

BRIDGING WITH CEMENT 1630'/1513'

With open end drillpipe at 1630', one hundred sack of El Toro construction cement was pumped in and displaced. (Mixing time 24 minutes, displacement time 8 minutes, slurry 112#. Completed at 10:25 P.M. with rig pumps.) After approximately 8 hours, stringers of cement were found 1580'/1630'. 75 sack of El Toro construction cement, with 3% of Aquagel flakes, was pumped in at 1630', and displaced with 19 barrels of mud. (Mixing time 25 minutes, displacing time 5 minutes. Completed at 2:55 P.M. with rig pumps.) After 11 hours and 50 minutes the top of the plug was located at 1513'. The locating of the plug at 1513' was witnessed by T. R. Cochran, of the Arizona Highway Patrol, and Loyd Baker, Deputy Sheriff. General Petroleum witness was Al Saulsbury, drilling foreman.

2-8

The mud was circulated out of the hole from 1513' with water.

2-13

8 feet of 13-3/8" casing was welded on the top of the existing 13-3/8" casing, bringing it to the ground level. The well was capped and abandoned February 13, 1949.

CONDITION OF HOLE AS ABANDONED

CASING RECORD: 13-3/8" cemented at 795' (No water shut-off test)

TOTAL DEPTH: 3432' PLUGGED DEPTH: 1513'

JUNK: None

HOLE SIZE SUMMARY:
17- $\frac{1}{2}$ " surface to 795'
12- $\frac{1}{4}$ " 795'/1320'
11" 1320'/3432'

B. K. Webb
March 29, 1949

Operator: General Petroleum Corporation
 Well No: Greager-State #14 -6
 Location: Sec. 6, T. 19 N., R. 23 E. (SW¹₄SW¹₄NW¹₄) Navajo County, Arizona
 Elevation: 5720' derrick floor
 Spud: December 17, 1948 Abandoned: February 17, 1949
 Total Depth: 3432' Plugged Depth: 1493'
 Junk: None

Geological Markers

Top Chinle	10'
Top Shinarump	595'
Top Moenkopie	674'
Top Kaibab	1124'
Top Coconino	1127'
Top Supai	1590'
Top Granite	3353'

Casing Record

20" Set at 12' - 13-3/8" set at 775' with 597 sax

TOP	BOTTOM	REC'D	FORMATION
DITCH SAMPLES			
0'	40'		Surface soil to 10' TOP CHINLE FORMATION AT 10' No samples taken.
40	50		Sand, white, fine to medium grained with shale, red fissile.
50	60		Sand, white, medium to coarse with grey shale.
60	80		Sand, as above.
80	100		Sand, as above with considerable grey shale and much bentonite
100	110		Sand, grey to white, medium to few coarse grains, round to sub-angular with some bentonite and shale.
110	130		Sand, as above.
130	140		Sand, as above. First electric log did not record above this point due to lack of fluid.
140	150		Shale, red, fissile.
150	160		Shale, red, fissile, with sand, white, coarse to medium, angular to sub-round.
160	180		Sand and shale, as above.
180	190		Shale, red, fissile, with minor sand and siltstone fragments.
190	200		Sand, white to grey, medium to coarse, angular to angular grains quartzitic composition.
200	210		No Sample.
210	220		Shale, variegated color, fissile with sand, white, medium grained, sub-angular.
220	230		Variegated sandy shale (Painted Desert Section)
230	240		Sandy shale, as above. Colors vary- white, grey, red, maroon.
240	250		Sandy shale, with streaks of siltstone, red massive. (1)

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General Petroleum Corporation - Greager-State #14-6 - Sec. 6, T. 19 N., R. 23 E., Navajo County

TOP	BOTTOM	REC'D	FORMATION
250	260'		Variegated sandy shale, as above with micaceous siltstone.
260	280		Sandy shale, as above with siltstone.
280	290		Sand, white, poorly indurated, sub-round, sub-angular, arkose composition.
290	300		Sand, as above, with variegated silty shale.
300	310		Shale, grey, red, white, fissile with sand, as above.
310	320		Sand, white to buff, poorly cemented, sub-angular, medium to coarse grains with shale, red and grey.
320	330		Shale, grey, fissile with white fragments of clay.
330	340		Shale, as above.
340	350		Sand, varied color - red predominate. Angular to sub-angular, fine to medium grained micaceous.
350	360		Sand, as above, with grey shale fragments.
360	370		Sand, as above with increase in shale.
370	380		Shale, red to grey fissile with sand, small amount, as above
380	390		Shale, as above
390	400		Siltstone, dark maroon, massive, with very fine crystals of sand, micaceous.
400	410		Siltstone, as above with bentonite.
410	420		Siltstone, vary colored with little bentonite and few sand grains.
420	430		Siltstone, red massive with fragments of white siltstone and some sand grains.
430	440		Siltstone, as above with bentonite.
440	450		Siltstone, as above with bentonite.
450	470		Siltstone, as above with bentonite. Survey at 470' 15 minutes.
470	480		Siltstone, as above.
480	490		Siltstone, dark maroon, massive, micaceous, with red (brick) shale, fissile.
490	500		Siltstone, as above with fragments of red shale and dark grey shale.
500	510		Siltstone and shales as above with increase of grey shale.
510	520		Shale, grey, dark fissile with grey and white siltstone.
520	540		Shale and siltstone, as above with bentonite.
540	550		Shale, grey, fissile with few conglomerate pebbles.
550	560		Shale, grey, fissile, with sand grains and much Cl., Minor amount of siltstone, dark maroon, massive.
560	570		Siltstone, dark grey, massive with coarse crystals of quartz and chert disseminated through the silt matrix.
570	580		Siltstone, as above.

(2)

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General Petroleum Corporation - Creager-State #11-6 - Sec. 6, T. 19 N., R. 23 E., Navajo County
 TOP BOTTOM REG'Y FORMATION

580	590	Siltstone and shale, variegated to dark red color, fissile, micaceous, bentonitic, few grains very fine, white sand.
590	600	Sandstone, white, poorly cemented, angular to sub-round, grains with streaks of red clay and shale. Sand is arkose. Schlumberger pick TOP OF SHINARUMP FORMATION AT 595 ft.
600	610	Sandstone, as above with increase of grain size. Shale and clay present in smaller amount.
610	620	Red conglomerate pebbles, shale, angular with a few red chert fragments with sandstone matrix as above.
620	630	Conglomerate, buff to yellow color, arkose composition, granule grain size, sub-round to angular matrix. Sandstone, buff, poorly cemented.
630	640	Conglomerate, as above with increased amount of sandstone, arkosic, grey to buff.
640	650	Conglomerate and sandstone, as above with small amount micaceous grey clay.
650	660	Conglomerate and sandstone, as above. (Poor sample)
660	670	Conglomerate and sandstone, as above.
670	680	Siltstone, dark red, massive. TOP OF MOENKOPIE FORMATION at 674 ft.
680	690	Siltstone, as above with streaks of sandstone, white, poorly cemented, porous, quartzitic.
690	700	Siltstone, as above without sand streaks.
700	710	Siltstone, dark red, as above with angular grains of buff, white, yellow arkose sand.
710	720	Siltstone, as above.
720	730	Siltstone, dark red to maroon, massive with streaks of shale, red, fissile.
730	740	Siltstone, as above.
740	750	Siltstone, as above.
750	760	Siltstone, as above with shale, brick red and sand, white, medium grained with cement of reddish material.
760	770	Shale and siltstone, brick red to maroon, micaceous.
770	780	Shale and siltstone, as above.
780	785	Siltstone, as above with high content of mica.
785	790	Siltstone, as above, micaceous, some shale.
790	795	Circulation sample at 795' siltstone, dull red with some fine to very fine grains of white arkose sand.
795	800	No sample - cement contamination - survey at 795 - 5 min.
800	810	Siltstone, as above.
810	815	Siltstone, as above.

General Petroleum Corporation Greager-State #14-6 - Sec. 6, T. 19 N., R. 23 E., Navajo County

TOP	BOTTOM	REC'D	FORMATION
<u>CORE #1 815' - 835' Rec. 20'</u>			
815	835	20'	Siltstone, mottled red and green, well indurated angular grains, well sorted, massive with white nodules of medium grained sand.
835	865		Siltstone, mottled red and green. In the red material mica is present in minor amounts with sand, white, fine grained.
<u>CORE #2 865' - 885' Rec. 20'</u>			
865	885	20'	Siltstone, mottled red and green. Silt size to a few very fine grains of sub-angular to sub-round shape. Well indurated, well sorted. Predominate mineral Quartz, massive, tight.
	(Top 11')		
	(Next 4')		Siltstone, red, other characteristics the same as above.
	(Bottom 5')		The same as top 11 feet.
885	890		Siltstone, mottled red and green.
890	900		Siltstone, as above with gypsum in small amount.
900	910		Siltstone, as above and sand, brown, medium to fine grains with little gypsum.
910	920		Sand, brownish grey, medium to fine, porous, fair induration, arkose composition.
920	930		Drilling break indicated sand, as above, stopped at 924'. Then siltstone, brown-red with mica and considerable gypsum.
930	950		Siltstone, with gypsum, as above.
950	960		Siltstone, as above.
960	970		Siltstone, as above.
970	980		Sand, grey, fine to medium grained, angular to sub-round with siltstone, as above.
980	990		Siltstone, red, massive with shale partings and gypsum.
1000	1010		Siltstone, red to dark maroon. Red crystals of Quartz are present in the silt matrix with gypsum and small amount of bentonite.
1010	1020		Siltstone, as above with shale, red, fissile.
1020	1030		Siltstone and shale, as above, with sand, white, medium grained, micaceous.
1030	1040		Siltstone, shale, and sand, as above.
1040	1050		Siltstone, dark maroon, micaceous. Little gypsum.
1050	1060		Siltstone, as above with large quantities of gypsum. (The silt is calcareous.)
1060	1080		Siltstone, as above.
1080	1090		Siltstone and shale, red, gypsum present. Survey at 1057' hole vertical.
1090	1100		Siltstone and shale, as above with sand, brown-red, fine to medium, sub-angular grains, micaceous, calcareous.
			Circulation sample at 1100 feet.
			Sand, brownish-red, fine to medium, sub-angular grains, micaceous, calcareous.
1100	1120		Sand, as above.

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General Petroleum Corporation - Greager-State #14-6 - Sec. 6, T. 19 N., R. 23 E., Navajo County

TOP	BOTTOM	REC'D Y	FORMATION
1120	1125		Sand, as above with appearance of limestone in large amounts, little chalk. Drilling time per foot slowed down. (Top of KAIBAB at 1124'.)
			Circulation Sample at 1127 feet. Sand, white, medium to a few coarse grains, massive, well indurated, angular to sub-angular, well sorted. Quartz predominate mineral. Fair porosity, fair K- Top of COCONINO at 1127 feet.
			Core #3 1127-1147' Rec. 7'.
1127	1140	0'	Missed.
1140	1147	7'	Sand, white, with slight brown stain, fine to medium grained, hard, sub-angular to rounded, well-sorted, quartz composition, cross bedded, tight. No show gas or oil.
			CORE #4 1151-1162' Rec. 3'.
			Sand, shale with slight brown stain, hard, rounded, well sorted, quartz predominate with mica in small flakes, bedding massive, fair porosity & K. (Mud invaded core) no fossils.
1162	---		Drilling ahead for 100 feet or to a drilling break from hard sand - then core.
1162	1200		Sand, white, with slight brown stain due to presence of flesh color quartz grains.
1200	1230		Sand, as above.
1230	1260		Sand, as above, with stringer or lenses of sand, flesh color, with same lithic characters as above. Survey at 1260 feet 30 minutes (0° 30'.)
1260	1270		Sand, as above with increase in sand, flesh to red color, fine to medium, sub-angular grains-color due to red quartz crystals, silica cement and small amount iron oxide.
1270	1280		Sand, white and flesh red, as above.
1280	1290		Sand, as above.
1290	1300		Sand, flesh red, fine to medium grained with sand, white. Circulation sample at 1300 feet. Sand, flesh red with minor amount sand, white, as above.
			CORE #5 1300-1320' Rec. 12'.
			Lost circulation while coring at 1308'.
1300	1305		Sand, reddish to flesh brown, fine to medium, hard, sub-angular to sub-round, well sorted quartz, cross-bedded, fair porosity and K. All quartz grains are white.
1305	1312		Missing.
1312	1314		Sand, brick red, fine to medium grained, well sorted, quartz, bedding indistinct, fair porosity & K, quartz grains are red - translucent, iron oxide cement.
1315	1316		Sand, as above, with lenses of brownish-white sand, bedding distinct, flat.
1316	1319		Sand, as described 1300'-1305'.
1320	----		Missing.
1320	1350		Sand, as above.

General Petroleum Corporation - Greager - State #14-6 - Sec. 6, T. 19 N., R. 23 E., Navajo County

TOP BOTTOM RECYZ FORMATION

CORE #6 1350'-1370' Rec. 9'.

1350	1353		Sand, brick red, fine to medium, well indurated, rounded to sub-rounded with few sub-angular grains. Quartzite and Limonite predominate with some biotite. Bedding indistinct. Good porosity and K. No fossils, appears to be wet.
1353	1355		Sand, as above with stringers of sand, with paler red color, also black carbon spots. (Do not give reaction with Carbon-Tet). Spots are found only in two inch zone.
1356			Sand, as above with red siltstone partings.
1357	1359		Sand, light brick red, other characters as of 1350-1353'.
1359	1370		Missing.
1370	1420		Sand, as above, in last core.

CORE #7 1420'-1530' Rec. 17'.

1420	1437	17'	Sand, barren, brick red to flesh red, well indurated, rounded to sub-rounded with a few sub-angular grains, well sorted, quartz predominate mineral, bedding indistinct, good porosity and K, siltstone partings. (No show gas or oil.)
1437	1440	0'	Missing.
1440	1500		Sand, as above.
1500	1505		Sand, as above.
1505	1510		Sand, as above, with shale, purple, fissile partings.
1517	----		Circulation sample. Sand, brick red to flesh red. Good porosity and K.
1510	1520		Sand, as above.
1520	1525		Sand, Tar. This is sand as described above with heavy Asphaltic material. Distribution spotty. Cuts with Carbon Tetrachloride. Distinct black discoloration of fluid.
1525	1530		Sand, as above. No tar found.
1530	----		Circulation sample. Sand, as above - No evidence of Tar.

CORE #8 1530'-1550' Rec. 5'.

1530	1550	5'	Sand, brick red to lighter red, fine to medium, well indurated, well sorted with siltstone partings. Sand is barren. Good porosity and K. A show of gas bubbles appeared for a few minutes in the mud.
------	------	----	--

CORE #9 1550'-1570' Rec. 17'.

1550	1563	13'	Sand, well indurated, fine to medium, well sorted, frosted quartz with feldspar and mica in small amounts. Bedding indistinct. Good porosity & K, siltstone partings. - No show.
1564			Sand, as above, with brick red color.
1565	1567	2'	Sand, as top 13'. No show.
1568	1570	0'	Missing.

General Petroleum Corporation-Creager-State #14-6-Sec. 6, T. 19N., R. 23 E. Navajo
TOP BOTTOM REC'Y FORMATION County

1570 1580 Sand, light red, fine to medium with quartz granules, white, frosted.

1585 1595 Sand and quartz, as above, with small amount of calcareous shale.

TOP SUPAI 1590'

1595 1600 Quartz granules as above with shale, red, fissile, limey.

1600 1625 Samples indicate decrease in amount of quartz and definite presence of shale, red, fissile, limey. Coring ahead to determine if not in the top of the Supai.

CORE #10 1625-1633' Rec. 10"

1625 Sand, red, fine to medium, hard, quartz predominate mineral, good porosity and K. No show gas or OIL. No taste or order.

1623 1633 Missing.
Lost circulation at 1627' and again at 1633'.

Survey at 1625' 1°.

1633 1660 Due to lost circulation problem no returns were obtained that can be placed in the log. A few returns indicate:
Sandstone, red with granules of quartz and a predominance of red, silty, micaceous shale.

CORE #11 1660'-1670' Rec. 10"
"Wire Line - Mercury"

Top 4"
6"

Cement
Sandstone, red, fine to medium, hard, angular to sub-angular, well sorted, quartz - bedding indistinct. Good porosity and K. No show, with spots of pure white sandstone with similar lithic character.

CORE #12 1670' - 1679' Rec. 6'
"Wire Line - Mercury"

1670 1676 6' Sandstone, dark red, fine to medium, fair induration, poorly sorted, quartz and iron oxide predominate. Porosity poor with spots of white sandstone, as above.

1676 1679 0' Missing.
No show gas - oil.

1679 1689 No sample.

1689 1700 Sandstone, shaley, dark red with white spots of sandstone.

1700 1710 Red shaley sandstone as above.

1710 1730 Shale and sandstone, as above.

General Petroleum Corporation - Greager-State #24-6 - Sec. 6, T. 19 N., R. 23 E., Navajo County

TOP BOTTOM RECY FORMATION

CORE #6 1353'-1370' Rec. 9'.

1350	1353		Sand, brick red, fine to medium, well indurated, rounded to sub-rounded with few sub-angular grains. Quartzite and Limonite predominate with some biotite. Bedding indistinct. Good porosity and K. No fossils, appears to be wet.
1353	1355		Sand, as above with stringers of sand, with paler red color, also black carbon spots. (Do not give reaction with Carbon-Tet). Spots are found only in two inch zone.
1356			Sand, as above with red siltstone partings.
1357	1359		Sand, light brick red, other characters as of 1350-1353'.
1359	1370		Missing.
1370	1420		Sand, as above, in last core.

CORE #7 1420'-1440' Rec. 17'.

1420	1437	17'	Sand, barren, brick red to flesh red, well indurated, rounded to sub-rounded with a few sub-angular grains, well sorted, quartz predominate mineral, bedding indistinct, good porosity and K, siltstone partings. (No show gas or oil.)
1437	1440	0'	Missing.
1440	1500		Sand, as above.
1500	1505		Sand, as above.
1505	1510		Sand, as above, with shale, purple, fissile partings.
1517	----		Circulation sample. Sand, brick red to flesh red. Good porosity and K.
1510	1520		Sand, as above.
1520	1525		Sand, Tar. This is sand as described above with heavy Asphaltic material. Distribution spotty. Cuts with Carbon Tetrachloride. Distinct black discoloration of fluid.
1525	1530		Sand, as above. No tar found.
1530	----		Circulation sample. Sand, as above - No evidence of Tar.

CORE #8 1530'-1550' Rec. 5'.

1530	1550	5'	Sand, brick red to lighter red, fine to medium, well indurated, well sorted with siltstone partings. Sand is barren. Good porosity and K. A show of gas bubbles appeared for a few minutes in the mud.
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CORE #9 1550'-1570' Rec. 17'.

1550	1563	13'	Sand, well indurated, fine to medium, well sorted, frosted quartz with feldspar and mica in small amounts. Bedding indistinct. Good porosity & K, siltstone partings. - No show.
1564			Sand, as above, with brick red color.
1565	1567	2'	Sand, as top 13'. No show.
1568	1570	0'	Missing.

General Petroleum Corporation-Creager State #14-6-Sec. 6, T. 19 N., R. 23 E. Navajo
TOP BOTTOM REC'Y FORMATION County

1730	1740		Red shale and sandstone, as above, with green shale mottling.	
1740	1760		Shale, red, fissile with few floating sand grains and mica.	
1760	1780		Shale, red, as above.	
1780	1800		Shale, red, fissile, as above.	
1800	1810		Shale, red with green shale partings.	
1813	1820		Red and green shale, as above.	
1820	1830		Shale, red, fissile, with some silt grains.	
1830	1840		Shale, red, as above.	
1840	1850		Shale, red, fissile, with shale, green and gypsum.	
1850	1863		Shale, as above, with gypsum.	

CORE #13 1863-1883 Rec. 20'

1863	1883	20'	Shale, red and green mottled, with red color predominate, silt to a few very fine grains, hard, well sorted, micaceous, fissile. Tight, veins of gypsum up to 1/2" in thickness. No show gas or oil.	
1883	1900		Shale, red and green with gypsum, as above.	
1900	1910		Shale, as above.	
1910	1920		No sample.	
1920	1940		Shale, red with gypsum and green shale, as above.	
1940	1950		Shale, green fissile with some fine sandstone, red.	
1950	1960		Sandstone, red with green and red shale and siltstone. Some gypsum.	
1960	1980		Sandstone, as above.	
1980	2000		Sandstone, with shale and siltstone, as above.	
2000	2010		Sandstone, with shale and siltstone, as above, and white sandstone, medium grained, silica cement.	
2010	2030		Sandstone, as above.	
2030	2050		Sandstone, with shale and siltstone, as above, white medium sandstone.	

CORE #14 2050-2070' Rec. 20'

2050	2060	10'	Sandstone, red, very fine to fine, soft, well sorted quartz and mica with large amount Limonite cement. Bedding indistinct with partings of red clay. Poor porosity, no K.	
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(8)

General Petroleum Corporation-Creager State #14-6, Sec. 6, T. 19 N., R. 23 E. Navajo
 TOP BOTTOM REC'Y FORMATION County

2060	2070	10'	Sandstone, as above with partings of sandstone, grey-green, hard, Quartz, tight, - Sandstone contains salt. Entire core barren.
2070	2115		No samples taken.
2115	2125		Sandstone, as above, with green and red shale, fissile. Silt particles and clay, red, iron oxide matrix. (cemented).
2125	2135		Shale, grey-green, fissile with clay and silt, red.
2135	2145		Shale, grey-green, fissile, calcareous, with decrease in clay and silt.
2145	2155		Shale, grey-green, fissile, slightly calcareous.
2155	2160		Shale, grey-green, fissile, slightly calcareous, with silt to very fine particles floating.
2160	2170		Shale, as above with sandstone, very fine to medium, highly calcareous.
2170	2180		Shale, with sandstone, calcareous, as above.
2180	2190		Shale, grey-green, fissile with sandstone, grey, fine to medium, highly calcareous.
2190	2200		Shale, with sandstone, as above.
2200	2210		Shale, grey-green, fissile, small amount sandstone and siltstone, slightly micaceous.
2210	2230		Shale and siltstone, as above with presence of red siltstone.
2230	2250		Siltstone, red, massive, with small amounts shale, grey-green fissile.
2250	2260		Siltstone, grey-green with some red and shale, grey-green, fissile.
2260	2270		Siltstone, as above, with sandstone, green, medium grains, glauconitic.
2270	2290		Siltstone, as above, with shale.
2290	2300		Siltstone, as above with shale.
2300	2320		Siltstone, as above, some shale.
2320	2330		Siltstone, with shale, as above.
2330	2340		Siltstone, grey-green, with some red and green shale, calcareous.
2340	2350		Siltstone and shale, as above.
2350	2360		Siltstone and shale, as above.
2360	2370		Siltstone and shale, as above.

General Petroleum Corporation-Creager State #14-6, Sec. 6, T. 19N., R. 23E. Navajo
 TOP BOTTOM REC'Y FORMATION County

2370	2380		Siltstone and shale, as above, shale has salty taste.	
2380	2390		Siltstone, as above, with salty taste with fragments of black siltstone.	
2390	2400		Siltstone, as above.	
2400	2410		Siltstone, as above, grey-green and black with minor amount red shaley siltstone.	
2412	2420		Siltstone and sandstone, grey-green and red massive with minor amount red shale partings.	
2420	2430		Siltstone, red, massive, with green siltstone with sandstone, red, very fine to fine.	
2430	2440		Siltstone with sandstone, as above with more green.	
2440	2450		Siltstone with sandstone, as above (Mud contains sand grains that are not Coconino and may be bedded within the siltstone.)	
2450	2460		Siltstone, as above with the above sand very fine to fine, white to reddish.	
2460	2470		Siltstone, as above and sandstone.	
2470	2480		Siltstone, grey-green with floating grains of Quartz, granule size with minor amount of red shale and siltstone and sandstone.	
2480	2490		Siltstone and sandstone, grey-green, as above.	
2490	2500		Siltstone, red and grey-green as above.	
2500	2520		Siltstone and sandstone, red with green mottling. Mottling due to salt content.	
2520	2530		Siltstone and sandstone, as above.	
CORE #15 2530'-2550' Rec. 4'				
Unable to determine missing section.				
Sandstone, red, very fine to a few fine grains. Fair induration, well sorted, Quartz mica, and Limonite predominate, bedding indistinct, poor porosity and K with partings of silty micaceous shale and green spots of salt. (No show).				
2550	2560		Sandstone, red, very fine to fine with siltstone and shale partings. Few spots of salt.	
2560	2570		Sandstone, with siltstone, shale and salt, as above.	
2570	2590		Sandstone, with siltstone, shale and salt, as above.	
2590	2600		Sandstone, with siltstone, as above and sandstone, pure white. (Small spots within the red.)	
2600	2610		Sandstone, with siltstone, as above.	
2610	2620		Siltstone, red to grey-green with sandstone.	(10)

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General Petroleum Corporation-Creager State #14-6, Sec. 6, T. 19N., R. 23E., Navajo
 TOP BOTTOM REC. Y FORMATION County

2620	2630		Sandstone, red, very fine to fine, with siltstone and shale, red.
2630	2640		Lost circulation. Returns no good.
2640	2650		Sandstone, red, very fine to fine with siltstone, red, massive and shale, red, fissile, with a few spots of green color salt.
2650	2660		Sandstone with siltstone and shale, as above.
2660	2670		Sandstone, as above with shale, dark grey, fissile, hard.
2670	2680		Sandstone and siltstone, with some shale.
2680	2690		Sandstone, red, very fine to fine
2690	2700		Sandstone, red, as above, sandy shale, dark grey, fissile, with floating quartz grains. (drilled about 5 times as hard as material above 2690')

CORE #16 2700-2717' Rec. 7'

2700	2707 (Top	7' 3')	Sandstone, red, very fine to fine, hard, angular to sub-angular grains, well sorted, quartz with mica cement by Silica and Limonite - bedding indistinct, porosity poor with siltstone partings and spots of green salt.
	(Bottom	4')	Top 6" - Sandstone, white, very fine, very hard, angular to sub-angular, Quartz with Mica (Biotite) - Silica cement. No bedding - No porosity or K. Next 2 feet - Sandstone, red, very fine to fine with siltstone as in top 3' of core. -- Next 6" Sandstone, grey-green, very fine to fine, very hard angular to sub-angular. Quartz Silica cement. Cross bedded, no porosity or K. Mottling of colors. Bottom Foot Sandstone, red, as above, with siltstone, salt.
2707	2717		Missing. (Entire Core Barren)
2720	2730		Sandstone, red, very fine to fine, hard with siltstone and green spots. Fragments of hard, grey-green and white sandstone, as above.
2730	2740		Sandstone, as above.
2740	2750		Sandstone, as above.
2750	2760		Sandstone, red, hard with red siltstone and a few fragments of hard, fissile, black shale.
2760	2770		Siltstone, sandy, red, massive, hard, with fragments of black shale and hard silica cement white-grey sandstone.

General Petroleum Corporation-Creager State #14-6, Sec. 6, T. 19N., R. 23E., Navajo
 TOP BOTTOM REC'Y FORMATION County

2770	2780		Sandy siltstone, red with shale and white sandstone, as above.	
2780	2790		Sandy siltstone, red as above.	
2790	2800		Siltstone, sandy red, massive with shale.	
2800	2810		Siltstone, sandy, dark red, massive, hard with fragments of white sandstone.	
2810	2820		Siltstone, with sandstone, red, massive, hard few green spots. (Do not have salty taste here)	
2820	2830		Poor sample - appears to be siltstone, as above.	
2830	2840		Siltstone, sandy, red, massive, slightly micaceous, small amount of gypsum.	
2840	2850		Siltstone, red as above with fragments of green, shaley siltstone.	
2850	2860		Siltstone, red, as above.	
2860	2870		Siltstone, red, massive, with sandstone, red and shale, red, fissile.	
2870	2880		Siltstone, red with mottling of green.	
2880	2890		No Sample.	
2890	2898		Siltstone, as above.	

CORE #17 2898-2918' Rec. 20'

2898	2902	4'	Sandstone, dark red, very fine to fine with a few medium grains of mica, hard, angular to sub-angular, well sorted, indistinct bedding, massive, poor porosity, no apparent K.	
2902	2903	1'	Conglomerate, dark grey, granule size with medium grains, sandy matrix. Predominate minerals quartz, feldspar, with gypsum and calcite veins and fragments of volcanic material.	
2903	2911	8'	Sandstone, as described 2898'-2902' with floating granules of Dolomitic-Siliceous material, and shale, red, fissile.	
2912	2913	1'	Sandstone and shale, as above with slickensides.	
2913	2917	4'	Sandstone, as above, highly fractured, with floating grains of granule size particles. Particles are Dolomitic with siliceous centers and gypsum veins.	
2917	2918	1'	Sandstone, as above, softer and with shale. (Entire core barren.)	

General Petroleum Corporation-Creager State #14-6, Sec. 6, T. 19 N., R. 23 E. Navajo
 TOP BOTTOM REC'Y FORMATION County

2919	2930		DARK red shaley siltstone with fragments of sandstone, white, fine. Siltstone contains siliceous dolomitic pebbles. Some gypsum, calcareous, matrix.	
2930	2940		Shale, siltstone, with white sandstone, as above.	
2940	2950		Shale, siltstone, with sandstone and gypsum, as above.	
2950	2960		Siltstone, dark red, shaley with siliceous dolomitic pebbles - some gypsum.	
2960	2970		Siltstone, dark red, as above.	
2970	2980		Siltstone, dark red, as above.	
2980	2990		No Sample.	
2990	3000		Siltstone, as above, having a dark blue cast, micaceous.	
3000	3010		Siltstone, as above.	
3010	3020		Siltstone, dark red, massive with shale, red, fissile.	
3020	3030		Siltstone, as above with a few fragments of limey material, green, hard.	
3030	3045		No Samples.	
			<u>CORE #18 3045' - 3049' Rec. 2'</u>	
Top	1½'		Siltstone, shaley, red, hard, with small veins of gypsum.	
Bottom	6"		Limestone, green-grey, hard, Amorphous, bedding indistinct, poor porosity with mottling of siltstone, red. (Two cones lost in hole.)	
3050	3060		Siltstone, red with shale and green limestone.	
3060	3070		Siltstone, dark red, massive with green limestone and red shale.	
3070	3080		Siltstone, dark red, slightly micaceous with some shale and gypsum.	
3080	3090		Siltstone, as above.	
3090	3100		No Sample.	
3100	3110		Siltstone, dark red, slightly micaceous with some gypsum.	
3110	3120		Siltstone, dark red, hard, with green limestone and red shale, fissile.	
3120	3130		Siltstone, as above.	

General Petroleum Corporation Creager State #14-6, Sec. 6, T. 19 N., R. 23E., Navajo County

TOP	BOTTOM	REC'Y	FORMATION
3130	3140		Siltstone, as above.
3140	3150		Siltstone, as above with fragments of green limestone and shale partings.
3150	3160		Siltstone, as above.
3160	3170		Siltstone, red, shaley.
3170	3180		Siltstone, shaley, red, hard.
3180	3190		Siltstone, as above.
<u>CORE #19 3192' - 3196" Cut. 4' Rec. 4'</u>			
3192	3194	2'	Sandstone, red, very fine to fine, hard with siltstone, and shale, red, partings. Spots of green limestone.
3194	3196	2'	Sandstone, as above, with floating grains of granule black quartz, slickensides.
3196	3210		No samples.
3210	3220		Sandstone, light grey, medium to coarse, calcareous, with pyrite crystals.
3220	3230		Sandstone, as above, with siltstone, red.
3230	3240		Siltstone, red, hard, with fragments of light grey sandstone, medium to coarse.
3240	3250		Siltstone, red, hard, with shale partings and a few spots of gypsum.
3250	3260		Siltstone, red as above with gypsum and Dolomite.
3260	3270		Siltstone, red, hard, with gypsum and Dolomite.
3270	3280		Siltstone, as above, with gypsum. No Dolomite.
3280	3290		Siltstone, as above, with increased amount of gypsum.
3290	3292		Siltstone, as above, with small amount of gypsum.
<u>CORE #20 3292-3294' Cut 2' Rec. 8"</u>			
			Sandstone, red, very fine to fine, hard, well sorted, some mica flakes, bedding indistinct, poor porosity, apparently little K. Vugs lined with white crystalline Calcite and green mottling of limestone. Red sandstone is slightly calcareous. Entire core barren.
3295	3300		Sandstone, red, very fine to fine, hard, with siltstone and calcite.
3300	3350		Sandstone, red, very fine, hard, as above, with siltstone partings and calcite.
3350	3355		Sandstone, as above, with fragments of non-weathered granitic material.
<u>TOP GRANITE 3353'</u>			(14)

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General Petroleum Corporation-Greager State #14-6, Sec. 6, T.19 N., R.23E., Navajo
 TOP BOTTOM REC'Y FORMATION County

3355 3360 Biotite Granite

3360 3375 Biotite Granite, as above.

CORE #21 3375' - 3377' Cut 2' Rec. 0'

CORE #22 3377' - 3378' Cut 1' Rec. 1'

Plus the 2' cut in Core #21

Biotite Granite

Essential Minerals:

1. Quartz - pink and white, euhedral crystals up to 3 mm.
2. Potash feldspar - pink

Characterizing Accessory Minerals:

1. Biotite - black, platy.

Minor Accessory Minerals:

1. Pyrite

Secondary Minerals:

1. Chlorite as alteration of Biotite

3378 3400 Biotite Granite

3400 3410 Biotite Granite

3410 3420 Biotite Granite

3420 3430 Biotite Granite

Drilling Break 3422'-3428' - Circulation Sample
 Indicates no change.

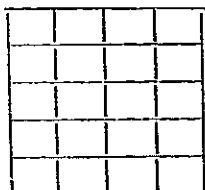
CORE #23 3431' - 3432' Cut 1'

Recovered only small fragments. Cutters were
 lost in the hole.

Coring time for the one foot was 1 hour and 45 min.

Biotite Granite: Material was finer grained, but
 the same composition with minute veins of calcite.

TOTAL DEPTH: 3432'



ARIZONA STATE LAND DEPARTMENT

 Lease or Arizona
 Permit No. OP 44404

Log of Oil or Gas Well

 Locate well
correctly

Company GENERAL PETROLEUM CORPORATION Address 612 South Flower Street,
Los Angeles 14, California
 Lessor or Tract Creager-State Field _____
 Well No. 14-6 Section 6 Township 19N Range 23E
 Meridian S.R. B&M County Navajo
 Location 330 feet (N) of South Line and 330 feet (E) of West Line of N 1/4 cor-
 Elevation 5720 (Derrick floor relative to sea level). ner of Section

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed S. C. Brown
 Date March 28, 1949 By: F. L. Wadsworth Title Agent
Chief Petroleum Engineer

The summary on this page is for the condition of the well at above date.
 Commenced drilling December 17, 1948 Finished drilling February 17, 1949

OIL OR GAS SANDS OR ZONES (Denote Gas By G)

No. 1, from _____ to _____ No. 4, from _____ to _____
 No. 2, from _____ to _____ No. 5, from _____ to _____
 No. 3, from _____ to _____ No. 6, from _____ to _____

IMPORTANT WATER SANDS

No. 1, from 270 to 290 No. 3, from _____ to _____
 No. 2, from 573 to 647 No. 4, from _____ to _____

CASING RECORD

Size Casing	Weight per Foot	Threads per Inch	Make	Amount	Kind of Shoe	Cut and Pulled From	Perforated		Purpose
							From	To	
<u>20"</u>				<u>12'</u>					
<u>13-3/8"</u>	<u>54#</u>		<u>J-55</u>	<u>775'</u>					

MUDDING AND CEMENTING RECORD

Size Casing	Where Set	Number of Sacks of Cement	Method Used	Mud Gravity	Amount of Mud Used
<u>20"</u>					

PLUGS AND ADAPTERS

Heaving plug—Material _____ Length _____ Plug _____ Depth set 1493'
 Adapters—Material _____ Size _____

 4
0044404

SHOOTING RECORD

Size	Shell Used	Explosive Used	Quantity	Date	Depth Shot	Depth Cleaned Out

TOOLS USED

Rotary tools were used from 0 feet to 3432 feet, and from feet to feet
 Cable tools were used from feet to feet, and from feet to feet

DATES

Put to producing
 The production for the first 24 hours was fluid, of which percent was
 per cent was emulsion, per cent water, and sediment.
 Gravity Deg. Be.
 If gas well, cubic feet per 24 hours Gallons gasoline per 1,000 cubic feet of gas
 Rock pressure, pounds per square inch

EMPLOYEES:

, Driller , Driller
 , Driller , Driller

FORMATION RECORD

From	To	Total Feet	Formation

(See log and core record, attached).

Approved:

GENERAL PETROLEUM CORPORATION

Company

Date

By

Title

512 S. Flower St., Los Angeles 14, California

Address

HISTORY OF OIL OR GAS WELL

It is of the greatest importance to have a complete history of the well. Please state in detail the dates of redrilling, together with the reasons for the work and its results. If there were any changes made in the casing, state fully, and if any casing was "sidetracked" or left in the well, give size and location. If the well has been dynamited, give size, date, position, and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position, and results of pumping or bailing.

(See attached history)



ARIZONA STATE LAND DEPARTMENT

Sundry Notices and Reports on Wells

 Lease or Arizona
 Permit No. O.P. 44404

Notice of intention to drill.....
 Notice of intention to change plans.....
 Notice of date for test of water shut-off.....
 Report on result of test of water shut-off.....
 Notice of intention to re-drill or repair well.....
 Notice of intention to shoot.....
 Subsequent record of shooting.....
 Record of perforating casing.....
 Notice of intention to pull or otherwise alter casing.....
 Notice of intention to abandon well..... **X**
 Subsequent report of abandonment.....
 Supplementary well history.....

 RECEIVED
 FEB 10 1949

ARIZONA

(Indicate above by check mark nature of report, notice or other data)

February 6 19 49

 Following is a (Notice of intention to do work) on land under (permit) described as follows:
 (Report of work done) (lease)

 Well No. Greager State #14-6 Sec. 6 T. 19N, R. 23E S.R.B. & M.
Section Township Range

 The well is located 330' feet ^(N) of South line and 330' feet
 (E) of west line of
Section N.W. $\frac{1}{4}$ sectionThe elevation of the derrick floor above sea level is 5720 feet

DETAILS OF PLAN OF WORK

 (State names of an expected depth to objective sands; show sizes, weights, and lengths of proposed casings;
 indicate mudding jobs, cementing points, and all other proposed work.)
Total Depth 3432 feet. Plan to place plug at base of Coconino formation (1590').
 Well is to be turned over to John Jones, Rancher, Holbrook for development as
 water well. 13 3/8 O.D. 54.5#. Grade J-55 was cemented at 795 feet.
Approved February 10, 1949
J.C. Williams
 State Land Commissioner

Arizona State Land Department

Address

Company GENERAL PETROLEUM CORPORATION
 By Silas C. Brown
 Agent Silas C. Brown

 Address P.O. Box 2745, Phoenix, Arizona
1373, Durango, Colo.

NOTE:—Reports on this form to be submitted in triplicate to the Commissioner for approval.

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OP 44404

Operator: General Petroleum Corporation

Well No: Creager-State #14-6

Location: 321' N 348' E
330' N & 330' E of W 1/4 corner - Sec. 6-T19N-R23E
Navajo County, Arizona

(correct location on Elec log)

Elevation: 5720' (derrick floor)

Spud: December 17, 1948

Abandoned: February 17, 1949

Total Depth: 3432'

Plugged Depth: 1493'

Junk: None

Geological Markers

Top Chinle	10'
Top Shinarump	595'
Top Moenkopie	674'
Top Kaibab	1124'
Top Coconino	1127'
Top Supai	1590'
Top Granite	3353'

Casing Record

20" set at 12'
13-3/8" set at 775' with 597 sax

Electric Log Depths: Surface to 3432'

OP 44404

Operator GENERAL PETROLEUM CORPORATION Field Navajo County (Arizona)
Well No. Creager State 14-6 Sec. 6 T 19N R 23E G & SR B. & M.

Signed Silas Brown

Date March 29, 1949

Title Agent

This well was drilled by K. L. Kellogg and Sons, drilling contractors,
using rotary equipment.

All measurements were taken from the kelly bushing 19.9' above the
cellar wall.

1948

DRILLING AN EXPLORATORY WELL

11-29

to Rotary equipment was moved in and rigged up.
12-17

12-18 17-1/2" hole was spudded December 17, 1948 and drilled to 795', circulation
to having been lost and regained at 647' and 785'.
12-26

12-27 A Schlumberger electric log was run from 140' to 795'.
to

12-29 CEMENTING 13-3/8" CASING AT 795'

13-3/8" O.D., new, 54#, J-55, short T&C casing was cemented at 795' with
530 sax of El Toro construction cement, the 1st 300 sax being mixed with
3% Aquagel. Return circulation was spotty. (Mixing time 42 minutes, dis-
placing time 30 minutes, slurry weight not recorded, final pressure 300#. Finished at 11:55 A.M. by Halliburton cementers). 66 sax of cement was
pumped in around the outside of the 13-3/8" casing, bringing cement to the
surface.

The casing was landed in the cellar and the drilling control head installed.
The casing was tested with 600# for 15 minutes. O.K.

12-30 12-1/4" hole was drilled and spot cored 795'/1320' and 11" hole drilled and
to spot cored 1320'/3432'. Circulation was lost and regained while drilling
2/5/49 at 1100', 1136', 1307', 1498', 1570', 1633', 1655', and 2633'. No showings
of oil or gas worthy of a test were encountered.

2-6 & A Schlumberger electric log was run 795'/3432'.
2-7

OP 44404

Page 2

Operator GENERAL PETROLEUM CORPORATION Field Navajo County (Arizona)
Well No. Creager State 14-6 Sec. 6 , T 19N , R 23E, G & SR B&M

Signed Silas Brown

Date March 29, 1949

Title Agent

ABANDONING

BRIDGING WITH CEMENT 1630'/1513'

With open end drillpipe at 1630', one hundred sack of El Toro construction cement was pumped in and displaced. (Mixing time 24 minutes, displacement time 8 minutes, slurry 112#. Completed at 10:25 P.M. with rig pumps). After approximately 8 hours, stringers of cement were found 1580'/1630'. 75 sack of El Toro construction cement, with 3% Aquajel flakes, was pumped in at 1630' and displaced with 19 barrels of mud. (Mixing time 25 minutes, displacing time 5 minutes. Completed at 2:55 P.M. with rig pumps). After 11 hours and 50 minutes the top of the plug was located at 1513'. The locating of the plug at 1513' was witnessed by T. R. Cochran, of the Arizona Highway Patrol and Loyd Baker, Deputy Sheriff. General Petroleum witness was Al Saulsbury, drilling foreman.

- 2-8 The mud was circulated out of the hole from 1513' with water.
2-13 8 feet of 13-3/8" casing was welded on to the top of the existing 13-3/8" casing, bringing it to the ground level. The well was capped and abandoned February 13, 1949.

CONDITION OF HOLE AS ABANDONED

CASING RECORD

13-3/8" cemented at 795' (No water shut-off test)

TOTAL DEPTH: 3432'

PLUGGED DEPTH: 1513'

JUNK: None

HOLE SIZE SUMMARY:

17-1/2" surface to 795'
12-1/4" 795'/1320'
11" 1320'/3432'

STATUS: Abandoned

B. K. Webb
March 29, 1949

0844404

COMPANY GENERAL PETROLEUM CORP. LEASE CREAGER STATE #14-6 WELL NO.

ELEVATION 5720' d.f. LOCATION: 330'N & 330'E of W 1/4 corner Sec. 6-19N-23E

SPUDED December 17, 1948

~~COMPLETION~~
Abandoned:

February 17, 1949

TOP	BOTTOM	REC'D	FORMATION
DITCH	SAMPLES		
0'	40'		Surface soil to 10' TOP CHINLE FORMATION AT 10' No samples taken.
40	50		<u>Sand</u> , white, fine to medium grained with shale, red, fissile.
50	60		<u>Sand</u> , white, medium to coarse with grey shale.
60	80		<u>Sand</u> , as above.
80	100		<u>Sand</u> , as above with considerable grey shale and much bentonite.
100	110		<u>Sand</u> , grey to white, medium to few coarse grains, round to sub-angular with some bentonite and shale.
110	130		<u>Sand</u> , as above.
130	140		<u>Sand</u> , as above. First electric log did not record above this point due to lack of fluid.
140	150		<u>Shale</u> , red, fissile.
150	160		<u>Shale</u> , red, fissile, with sand, white, coarse to medium angular to sub-round.
160	180		<u>Sand and shale</u> , as above.
180	190		<u>Shale</u> , red, fissile, with minor sand and siltstone fragments.
190	200		<u>Sand</u> , white to grey, medium to coarse, angular to angular grains quartzitic composition.
200	210		No Sample.
210	220		<u>Shale</u> , variegated color, fissile with sand, white, medium grained, sub-angular.
220	230		Variegated sandy <u>shale</u> (Painted Desert Section).
230	240		Sandy <u>shale</u> , as above. Colors vary - white, grey, red, maroon.
240	250		Sandy <u>shale</u> , with streaks of siltstone, red, massive.

0844404

COMPANY GENERAL PETROLEUM CORP. LEASE CREAGER-STATE #14-6 WELL NO.

ELEVATION 5720' d.f. LOCATION: 330'N & 330'E of W 1/4 corner Sec. 6-T19N-R23E
S.R. B&M

SPUDDED December 17, 1948

~~SPUDDED~~
Abandoned:

February 17, 1949

TOP	BOTTOM	REC'D	FORMATION
250'	260'		Variegated <u>sandy shale</u> , as above with micaceous red siltstone.
260	280		<u>Sandy shale</u> , as above with siltstone.
280	290		<u>Sand</u> , white, poorly indurated, sub-round, sub-angular, arkose composition.
290	300		<u>Sand</u> , as above with variegated silty shale.
300	310		<u>Shale</u> , grey, red, white, fissile with sand, as above.
310	320		<u>Sand</u> , white to buff, poorly cemented, sub-angular, medium to coarse grains with shale, red and grey.
320	330		<u>Shale</u> , grey, fissile with white fragments of clay.
330	340		<u>Shale</u> , as above.
340	350		<u>Sand</u> , varied color- red predominate. Angular to sub-angular, fine to medium grained micaceous.
350	360		<u>Sand</u> , as above with grey shale fragments.
360	370		<u>Sand</u> , as above with increase in shale.
370	380		<u>Shale</u> , red to grey fissile with sand, small amount, as above.
380	390		<u>Shale</u> , as above.
390	400		<u>Siltstone</u> , dark maroon, massive, with very fine crystals of sand, micaceous.
400	410		<u>Siltstone</u> , as above with bentonite.
410	420		<u>Siltstone</u> , vary colored with little bentonite and few sand grains.
420	430		<u>Siltstone</u> , red, massive with fragments of white siltstone and some sand grains.
430	440		<u>Siltstone</u> , as above with bentonite.
440	450		<u>Siltstone</u> , as above with bentonite.
450	470		<u>Siltstone</u> , as above with bentonite. Survey at 470' 15 minutes.

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FORM 1672

COMPANY GENERAL PETROLEUM CORP. LEASE GREAGER STATE #14-6 WELL NO. Page 3

ELEVATION 5720' d.f. LOCATION: 330' N & 330' E of W 1/4 corner Sec. 6-T19N-R23E S.R. B&W

SPUDDED December 17, 1948 COMPLETED February 17, 1949
Abandoned;

TOP	BOTTOM	REC'D	FORMATION
470'	480'		Siltstone, as above.
480	490		Siltstone, dark maroon, massive, micaceous with red (brick) shale, fissile.
490	500		Siltstone, as above with fragments of red shale and dark grey shale.
500	510		Siltstone and shales as above with increase of grey shale.
510	520		Shale, grey, dark fissile with grey and white siltstone.
520	540		Shale and siltstone, as above with bentonite.
540	550		Shale, grey, fissile with few conglomerate pebbles.
550	560		Shale, grey, fissile with sand grains and much Cl., minor amount of siltstone, dark maroon, massive.
560	570		Siltstone, dark grey, massive with coarse crystals of quartz and chert disseminated through the silt matrix.
570	580		Siltstone, as above.
580	590		Siltstone and shale, variegated to dark red color, fissile, micaceous, bentonitic, few grains very fine, white sand.
590	600		Sandstone, white, poorly cemented, angular to sub-round, grains with streaks of red clay and shale. Sand is arkose. Schlumberger pick TOP OF SHINARUMP FORMATION AT 595 ft.
600	610		Sandstone, as above with increase of grain size. Shale and clay present in smaller amount.
610	620		Red conglomerate pebbles, shale, angular with a few red chert fragments with sandstone matrix as above.
620	630		Conglomerate, buff to yellow color, arkose composition, granule grain size, sub-round to angular matrix. Sandstone, buff, poorly cemented.
630	640		Conglomerate, as above with increased amount of sandstone, arkosic, grey to buff.

op 44404

FORM 1872

COMPANY GENERAL PETROLEUM CORP. LEASE GREAGER STATE #14-6 WELL NO.

ELEVATION 5720' d.f. LOCATION: 330'N & 330'E of W 1/4 corner Sec. 6-T19N-R23E
S.R. B&M

SPUDDED December 17, 1948

~~CONFERRED~~
Abandoned:

February 17, 1949

TOP	BOTTOM	REC'D	FORMATION
640'	650'		<u>Conglomerate and sandstone</u> as above with small amount micaceous grey clay.
650	660		<u>Conglomerate and sandstone</u> , as above. (Poor sample).
660	670		<u>Conglomerate and sandstone</u> , as above.
670	680		<u>Siltstone</u> , dark red, massive. <u>TOP OF MOENKOPIE FORMATION</u> at 674 ft.
680	690		<u>Siltstone</u> , as above with streaks of sandstone, white, poorly cemented, porous, quartzitic.
690	700		<u>Siltstone</u> , as above with out sand streaks.
700	710		<u>Siltstone</u> , dark red, as above with angular grains of buff, white, yellow arkose sand.
710	720		<u>Siltstone</u> , as above.
720	730		<u>Siltstone</u> , dark red to maroon, massive with streaks of shale, red, fissile.
730	740		<u>Siltstone</u> , as above.
740	750		<u>Siltstone</u> , as above.
750	760		<u>Siltstone</u> , as above with shale, brick red and sand, white, medium grained with cement of reddish material.
760	770		<u>Shale and siltstone</u> , brick red to maroon, micaceous.
770	780		<u>Shale and siltstone</u> , as above.
780	785		<u>Siltstone</u> , as above with high content of mica.
785	790		<u>Siltstone</u> , as above, micaceous, some shale.
790	795		Circulation sample at 795' <u>siltstone</u> , dull red with some fine to very fine grains of white arkose sand.
795	800		No Sample - cement contamination - Survey at 795 - 5 min.
800	810		<u>Siltstone</u> , as above.
810	815		<u>Siltstone</u> , as above.

FORM 1672

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COMPANY GENERAL PETROLEUM CORP. LEASE CREAGER STATE #14-6 WELL NO.

ELEVATION 5720' a.f. LOCATION: 330'N & 330'E of W 1/4 corner Sec. 6-T19N-R23E
S.R. B&MSPUDDED December 17, 1948 ~~CANADIAN~~ Abandoned: February 17, 1949

TOP	BOTTOM	REC'D	FORMATION
815	835	20'	CORE #1 815'-835' Rec. 20' Siltstone, mottled red and green, well indurated angular grains, well sorted, massive with white nodules of medium grained sand.
835	865		Siltstone, mottled red and green. In the red material mica is present in minor amounts with sand, white, fine grained.
865	885	20'	CORE #2 865'-885' Rec. 20'
	(Top 11')		Siltstone, mottled red and green. Silt size to a few very fine grains of sub-angular to sub-round shape. Well indurated, well sorted. Pre-dominate mineral Quartz, massive, tight.
	(Next 4')		Siltstone, red, other characteristics the same as above.
	(Bottom 5')		The same as top 11 feet.
885	890		Siltstone, mottled red and green.
890	900		Siltstone, as above with gypsum in small amount.
900	910		Siltstone, as above and sand, brown, medium to fine grains with little gypsum.
910	920		Sand, brownish grey, medium to fine, porous, fair induration, arkose composition.
920	930		Drilling break indicated sand, as above, stopped at 924'. Then siltstone, brown-red with mica and considerable gypsum.
930	950		Siltstone, with gypsum, as above.
950	960		Siltstone, as above.
960	970		Siltstone, as above.
970	980		Sand, grey, fine to medium grained, angular to sub-round with siltstone, as above.
980	990		Siltstone, red, massive with shale partings and gypsum.
1000	1010		Siltstone, red to dark maroon. Red crystals of Quartz are present in the silt matrix with gypsum and small amount of bentonite.

OP 44404

COMPANY GENERAL PETROLEUM CORP. LEASE CREAGER STATE #1406 WELL NO.

ELEVATION 5720' d.f. LOCATION: 330'N & 330'E of W 1/4 corner Sec. 6-T19N-R23E
S.R. B&M

SPUDED December 17, 1948

~~COMPLETED~~ February 17, 1949
Abandoned:

TOP	BOTTOM	REC'D	FORMATION
1010	1020		Siltstone, as above with shale, red, fissile.
1020	1030		Siltstone and shale, as above with sand, white, medium grained, micaceous.
1030	1040		Siltstone, shale and sand, as above.
1040	1050		Siltstone, dark maroon, micaceous. Little gypsum.
1050	1060		Siltstone, as above with large quantities of gypsum. (The silt is calcareous).
1060	1080		Siltstone, as above.
1080	1090		Siltstone and shale, red, gypsum present. Survey at 1057' hole vertical.
1090	1100		Siltstone and shale, as above with sand, brown-red, fine to medium, sub-angular grains, micaceous, calcareous.
			Circulation sample at 1100 feet.
			Sand, brownish-red, fine to medium, sub-angular grains, micaceous, calcareous.
1100	1120		Sand, as above.
1120	1125		Sand, as above with appearance of limestone in large amounts, little chalk. Drilling time per foot slowed down. (Top of KAIBAB at 1124')
			Circulation Sample at 1127 feet.
			Sand, white, medium to a few coarse grains, massive, well indurated, angular to sub-angular, well sorted. Quartz predominate mineral. Fair porosity, fair K-Top of COCONINO at 1127 feet.
			CORE #3 1127-1147' Rec. 7'
1127	1140	0'	Missed.
1140	1147	7'	Sand, white, with slight brown stain, fine to medium grained, hard, sub-angular to rounded, well sorted, quartz composition, cross bedded, tight. No show gas or oil.

op 44404

FORM 1672

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COMPANY GENERAL PETROLEUM CORP. LEASE CREAGER STATE #14-6 WELL NO.

ELEVATION 5720' d.f. LOCATION: 330'N & 330'E of W 1/4 corner Sec. 6-T19N-R23E
S.R. B&M

SHUT DOWN December 17, 1948

~~CREAGER~~
Abandoned:

February 17, 1949

TOP	BOTTOM	RECY	FORMATION
			<u>CORE #4 1151-1162' Rec. 3'</u>
			(Unable to determine missing section)
1162	--		<u>Sand</u> , shale with slight brown stain, hard, rounded, well sorted, quartz predominate with mica in small flakes, bedding massive, fair porosity & K. (Mud invaded core) no fossils. Drilling ahead for 100 feet or to a drilling break from hard sand- then core.
1162	1200		<u>Sand</u> , white, with slight brown stain, hard quartz, rounded, well sorted, brown stain due to presence of flesh color quartz grains.
1200	1230		<u>Sand</u> , as above.
1230	1260		<u>Sand</u> , as above with stringer or lenses of sand, flesh color, with same lithic characters as above. Survey at 1260 feet 30 minutes (0° 30').
1260	1270		<u>Sand</u> , as above with increase in sand, flesh to red color, fine to few medium, sub-angular grains-color due to red quartz crystals, silica cement and small amount iron oxide.
1270	1280		<u>Sand</u> , white and flesh red, as above.
1280	1290		<u>Sand</u> , as above.
1290	1300		<u>Sand</u> , flesh red, fine to medium grained with sand, white. Circulation Sample at 1300 feet. <u>Sand</u> , flesh red with minor amount sand, white, as above.
			<u>CORE #5 1300-1320' Rec. 12'</u>
1300	1305		Lost circulation while coring at 1308'. <u>Sand</u> , reddish to flesh brown, fine to medium, hard, sub-angular to sub-round, well sorted quartz, cross-bedded, fair porosity and K. All quartz grains are white.
1305	1312		Missing.
1312	1314		<u>Sand</u> , brick red, fine to medium grained, well sorted, quartz, bedding indistinct, fair porosity & K, quartz grains are red, translucent, iron oxide cement.
1315	1316		<u>Sand</u> , as above with lenses of brownish-white sand, bedding distinct, flat.

OP 44404

COMPANY GENERAL PETROLEUM CORP. LEASE CREAGER STATE #14-6 WELL NO.

ELEVATION 5720' d.f. LOCATION: 330'N & 330'E of W 1/4 corner Sec. 6-T19N-R23E
S.R. B&M

SPUDDED December 17, 1948

~~XXXXXXXXXX~~
Abandoned:

February 17, 1949

TOP	BOTTOM	REC'D	FORMATION
1316	1319		CORE #5 (continued)
1320	-		Sand, as described 1300'-1305'. Missing.
1320	1350		<u>Sand</u> , as above.
1350	1353		CORE #6 1350'-1370' Rec. 9' <u>Sand</u> , brick red, fine to medium, well indurated, rounded to sub-rounded with few sub-angular grains. Quartzite and Limonite predominate with some biotite. Bedding indistinct. Good porosity and K. No fossils, appears to be <u>Wet</u> .
1353	1355		<u>Sand</u> , as above with stringers of sand, with paler red color, also black carbon spots. (Do not give reaction with Carbon-Tet) Spots are found only in two inch zone.
1356			<u>Sand</u> , as above with red siltstone partings.
1357	1359		<u>Sand</u> , light brick red, other characters as of 1350'-1353'.
1359	1370		Missing.
1370	1420		<u>Sand</u> , as above, in last core.
1420	1437	17'	CORE #7 1420'-1440' Rec. 17' <u>Sand</u> , barren, brick red to flesh red, well indurated, rounded to sub-rounded with a few sub-angular grains, well sorted, quartz predominate mineral, bedding indistinct, good porosity and K, siltstone partings. (No show gas or oil).
1437	1440	0'	Missing.
1440	1500		<u>Sand</u> , as above.
1500	1505		<u>Sand</u> , as above.
1505	1510		<u>Sand</u> , as above with shale, purple, fissile partings.
1517	-		Circulation sample. <u>Sand</u> , brick red to flesh red. Good porosity and K.
1510	1520		<u>Sand</u> , as above.
1520	1525		<u>SAND, TAR</u> . This is sand as described above with heavy Asphaltic material. Distribution spotty. Cuts with carbon tetra chloride. Distinct black discoloration of fluid.
1525	1530		<u>Sand</u> , as above. No tar found.

OP 44404

COMPANY GENERAL PETROLEUM CORP. LEASE CREAGER STATE #14-6 WELL NO.

ELEVATION 5720' d.f. LOCATION: 330'N & 330'E of W 1/4 corner Sec. 6-19N-23E

SPUDED December 17, 1948

~~ABANDONED~~ February 17, 1949
Abandoned:

TOP	BOTTOM	REC'D	FORMATION
1530	-		Circulation Sample. Sand, as above- No evidence of TAR.
1530	1550	5'	CORE #8 1530-1550' Rec. 5' Sand, brick red to lighter red, fine to medium, well indurated, well sorted with siltstone partings. Sand is barren. Good porosity and K. A show of gas bubbles appeared for a few minutes in the mud.
1550	1563	13'	CORE #9 1550-1570' Rec. 17' Sand, well indurated, fine to medium, well sorted, frosted quartz with feldspar and mica in small amounts. Bedding indistinct. Good porosity & K, siltstone partings. - No show.
1564			Sand, as above with brick red color.
1565	1567	2'	Sand, as top 13'. No show.
1568	1570	0'	Missing.
1570	1580		Sand, light red, fine to medium with quartz granules, white, frosted.
1585	1595		Sand and quartz, as above, with small amount of calcareous shale. TOP SUPAI 1590'
1595	1600		Quartz granules as above with shale, red, fissile, limey.
1600	1625		Samples indicate decrease in amount of quartz and definite presence of shale, red, fissile, limey. Coring ahead to determine if not in the top of the Supai.
1625			CORE #10 1625-1633' Rec. 10" Sand, red, fine to medium, hard, quartz predominate mineral, good porosity and K. No show gas or oil. No taste or odor.
1626	1633		Missing. Lost circulation at 1627' and again at 1633'.
1633	1660		Survey at 1625' 1°. Due to lost circulation problem no returns were obtained that can be placed in the log. A few returns indicate: Sandstone, red with granules of quartz and a predominance of red, silty, micaceous shale.

FORM 1672

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COMPANY GENERAL PETROLEUM CORP. LEASE GREAGER STATE #14-6 WELL NO.

ELEVATION 5720' d.f. LOCATION: 330'N & 330'E of W 1/4 corner Sec. 6-T19N-R23E
S.R. B&M

SPUDDED December 17, 1948

~~COMPLETED~~
Abandoned: February 17, 1949

TOP	BOTTOM	REC'D	FORMATION
			CORE #11 1660'-1670' Rec. 10" "Wire Line - Mercury"
	Top	4" 6"	Cement. Sandstone, red, fine to medium, hard, angular to sub-angular, well sorted, quartz- bedding indistinct. Good porosity and K. No show, with spots of pure white sandstone with similar lithic character.
1670	1676	6'	CORE #12 1670'-1679' Rec. 6' "Wire Line - Mercury" Sandstone, dark red, fine to medium, fair induration, poorly sorted, quartz and iron oxide predominate. Porosity poor with spots of white sandstone, as above.
1676	1679	0'	Missing. No show gas - oil.
1679	1689		No Sample.
1689	1700		Sandstone, shaley, dark red with white spots of sandstone.
1700	1710		Red shaley sandstone, as above.
1710	1730		Shale and sandstone, as above.
1730	1740		Red shale and sandstone, as above with green shale mottling.
1740	1760		Shale, red, fissile with few floating sand grains and mica.
1760	1780		Shale, red, as above.
1780	1800		Shale, red, fissile, as above.
1800	1810		Shale, red with green shale partings.
1813	1820		Red and green shale, as above.
1820	1830		Shale, red, fissile with some silt grains.
1830	1840		Shale, red, as above.
1840	1850		Shale, red, fissile with shale, green and gypsum.
1850	1863		Shale, as above with gypsum.

OP 44404

FORM 1872

COMPANY GENERAL PETROLEUM CO. P. LEASE CREEGER STATE #14-6 WELL NO.

ELEVATION 5720' d.f. LOCATION: 330'N & 330'E of W 1/4 corner Sec. 6-T19N-R23E
S.R. B&M

SPUDED December 17, 1948

~~COMPLETION~~ February 17, 1949
Abandoned:

TOP	BOTTOM	REC'D	FORMATION
1863	1883	20'	CORE #13 1863-1883 Rec. 20' Shale, red and green mottled, with red color predominate, silt to a few very fine grains, <u>hard</u> , well sorted, micaceous, fissile. Tight, veins of gypsum up to 1/2" in thickness. No show gas or oil.
1883	1900		Shale, red and green with gypsum, as above.
1900	1910		Shale, as above.
1910	1920		No Sample.
1920	1940		Shale, red with gypsum and green shale, as above.
1940	1950		Shale, green, fissile with some fine sandstone, red.
1950	1960		Sandstone, red with green and red shale and siltstone. Some gypsum.
1960	1980		Sandstone, as above.
1980	2000		Sandstone, with shale and siltstone, as above.
2000	2010		Sandstone, with shale and siltstone, as above and white sandstone, medium grained, silica cement.
2010	2030		Sandstone, as above.
2030	2050		Sandstone, with shale and siltstone, as above, white, medium sandstone.
2050	2060	10'	CORE #14 2050-2070' Rec. 20' Sandstone, red, very fine to fine, soft, well sorted quartz and mica with large amount Limonite cement. Bedding indistinct with partings of red clay. Poor porosity, no K.
2060	2070	10'	Sandstone, as above with partings of sandstone, grey-green, hard, Quartz, tight, - Sandstone contains salt. Entire Core barren.
2070	2115		No Samples Taken.
2115	2125		Sandstone, as above with green and red shale, fissile. Silt particles and clay, red, iron oxide matrix. (cemented).
2125	2135		Shale, grey-green, fissile with clay and silt, red.

CP 44404

COMPANY GENERAL PETROLEUM CORP. LEASE CREAGER STATE #14-6 WELL NO.

ELEVATION 5720' a.f. LOCATION: 330'N & 330'E of W 1/4 corner Sec. 6-T19N-R23E
S.R. B&M

SPUDED December 17, 1948

~~ABANDONED~~
Abandoned:

February 17, 1949

TOP	BOTTOM	REC'D	FORMATION
2135	2145		<u>Shale</u> , grey-green, fissile, calcareous with decrease in clay and silt.
2145	2155		<u>Shale</u> , grey-green, fissile, slightly calcareous.
2155	2160		<u>Shale</u> , grey-green, fissile, slightly calcareous with silt to very fine particles floating.
2160	2170		<u>Shale</u> , as above with sandstone, very fine to medium, highly calcareous.
2170	2180		<u>Shale</u> , with sandstone, calcareous, as above.
2180	2190		<u>Shale</u> , grey-green, fissile with sandstone, grey, fine to medium, highly calcareous.
2190	2200		<u>Shale</u> , with sandstone, as above.
2200	2210		<u>Shale</u> , grey-green, fissile, small amount sandstone and siltstone, slightly micaceous.
2210	2230		<u>Shale and siltstone</u> , as above with presence of red siltstone.
2230	2250		<u>Siltstone</u> , red, massive with small amount shale, grey-green, fissile.
2250	2260		<u>Siltstone</u> , grey-green with some red and shale, grey-green, fissile.
2260	2270		<u>Siltstone</u> , as above with sandstone, green, medium grains, glauconitic.
2270	2290		<u>Siltstone</u> , as above with shale.
2290	2300		<u>Siltstone</u> , as above with shale.
2300	2320		<u>Siltstone</u> , as above, some shale.
2320	2330		<u>Siltstone</u> with shale, as above.
2330	2340		<u>Siltstone</u> , grey-green with some red and green shale, calcareous.
2340	2350		<u>Siltstone and shale</u> , as above.
2350	2360		<u>Siltstone and shale</u> , as above.

CP 44404

FORM 1672

COMPANY GENERAL PETROLEUM CORP.

LEASE

Page 13
CREAGER STATE #14-6

WELL NO.

ELEVATION 5720' d.f. LOCATION: 330'N & 330'E of W 1/4 corner Sec. 6-T19N-R23E
S.R. B&M

SPUDDED December 17, 1948

COMPLETED February 17, 1949
Abandoned:

TOP	BOTTOM	REC'D	FORMATION
2360	2370		<u>Siltstone and shale</u> , as above.
2370	2380		<u>Siltstone and shale</u> , as above, shale has salty taste.
2380	2390		<u>Siltstone</u> , as above with salty taste with fragments of black siltstone.
2390	2400		<u>Siltstone</u> , as above.
2400	2410		<u>Siltstone</u> , as above- grey-green and black with minor amount red shaley siltstone.
2412	2420		<u>Siltstone and sandstone</u> , grey-green and red massive with minor amount red shale partings.
2420	2430		<u>Siltstone</u> , red, massive with green siltstone with sandstone, red, very fine to fine.
2430	2440		<u>Siltstone with sandstone</u> , as above with more green.
2440	2450		<u>Siltstone with sandstone</u> , as above (Mud contains sand grains that are not Coconino and may be bedded within the siltstone).
2450	2460		<u>Siltstone</u> , as above with the above sand very fine to fine, white to reddish.
2460	2470		<u>Siltstone</u> , as above and sandstone.
2470	2480		<u>Siltstone</u> , grey-green with floating grains of Quartz, granule size with minor amount of red shale and siltstone and sandstone.
2480	2490		<u>Siltstone and sandstone</u> , grey-green, as above.
2490	2500		<u>Siltstone</u> , red and grey-green, as above.
2500	2520		<u>Siltstone and sandstone</u> , red with green mottling. Mottling due to salt content.
2520	2530		<u>Siltstone and sandstone</u> , as above.
CORE #15 2530'-2550' Rec. 4'			
Unable to determine missing section.			
<u>Sandstone</u> , red, very fine to a few fine grains. Fair induration, well sorted, Quartz, mica and Limonite predominate, bedding indistinct, Poor porosity and K with partings of silty (continued)			

OP 44404

COMPANY GENERAL PETROLEUM CORP. LEASE CREAGER STATE #14-6 WELL NO.

ELEVATION 9720' a.f. LOCATION: 330'N & 330'E of W 1/4 corner Sec. 6-19N-23E

SPUDDED December 17, 1948

~~RECEIVED~~ February 17, 1949~~Abandoned~~

TOP	BOTTOM	REC'D	FORMATION
			micaceous shale and green spots of salt. (No show).
2550	2560		<u>Sandstone</u> , red, very fine to fine with siltstone and shale partings. Few spots of salt.
2560	2570		<u>Sandstone</u> , with siltstone, shale and salt, as above.
2570	2590		<u>Sandstone</u> , with siltstone, shale and salt, as above.
2590	2600		<u>Sandstone</u> , with siltstone, as above and sandstone, pure white. (Small spots within the red.)
2600	2610		<u>Sandstone</u> , with siltstone, as above.
2610	2620		<u>Siltstone</u> , red to grey-green with sandstone.
2620	2630		<u>Sandstone</u> , red, very fine to fine, with siltstone and shale, red.
2630	2640		Lost circulation. Returns no good.
2640	2650		<u>Sandstone</u> , red, very fine to fine with siltstone, red, massive and shale, red, fissile with a few spots of green color salt.
2650	2660		<u>Sandstone</u> with siltstone and shale, as above.
2660	2670		<u>Sandstone</u> , as above with shale, dark grey, fissile, hard.
2670	2680		<u>Sandstone and siltstone</u> , with some shale.
2680	2690		<u>Sandstone</u> , red, very fine to fine.
2690	2700		<u>Sandstone</u> , red, as above with sandy shale, dark grey, fissile, with floating quartz grains. (Drilled about 5 times as hard as material above 2690').
2700	2707	7'	CORE #16 2700'-2717' Rec. 7'
	(Top 3')		<u>Sandstone</u> , red, very fine to fine, hard, angular to sub-angular grains, well sorted, Quartz with mica cement by Silica and Limonite- Bedding indistinct, porosity poor with siltstone partings and spots of green salt.
	(Bottom 4')		Top 6"- <u>Sandstone</u> , white, very fine, very hard, angular to sub-angular, Quartz with Mica (Biotite)- Silica cement. No bedding - No porosity or K.

(continued)

CP44404

COMPANY GENERAL PETROLEUM CORP. LEASE CREAGER STATE #14-6 WELL NO.

ELEVATION 5720' d.f. LOCATION: 330'N & 330'E of W 1/4 corner Sec. 6-19N-23E
S.R. B&M

SPUDDED December 17, 1948

~~RECOMMENDED~~ February 17, 1949
Abandoned:

TOP	BOTTOM	RECY	FORMATION
			<u>CORE #16 (continued)</u>
			Next 2 feet- <u>Sandstone</u> , red, very fine to fine with siltstone as in top 3' of core.
			Next 6" <u>Sandstone</u> , grey-green, very fine to fine, very hard, angular to sub-angular. Quartz Silica cement. Cross bedded, no porosity or K. Mottling of colors.
			Bottom Foot- <u>Sandstone</u> , red, as above with siltstone, salt.
2707	2717		Missing. (Entire Core Barren)
2720	2730		<u>Sandstone</u> , red, very fine to fine, hard with siltstone and green spots. Fragments of hard, grey-green and white sandstone, as above.
2730	2740		<u>Sandstone</u> , as above.
2740	2750		<u>Sandstone</u> , as above.
2750	2760		<u>Sandstone</u> , red, hard with red siltstone and a few fragments of hard, fissile, black shale.
2760	2770		<u>Siltstone</u> , sandy, red, massive, hard with fragments of black shale and hard silica cement white-grey sandstone.
2770	2780		Sandy <u>siltstone</u> , red with shale and white sandstone, as above.
2780	2790		Sandy <u>siltstone</u> , red as above.
2790	2800		<u>Siltstone</u> , sandy red, massive with shale.
2800	2810		<u>Siltstone</u> , sandy, dark red, massive, hard with fragments of white sandstone.
2810	2820		<u>Siltstone</u> , with sandstone, red, massive, hard, few green spots. (Do not have salty taste here).
2820	2830		Poor Sample - Appears to be siltstone, as above.
2830	2840		<u>Siltstone</u> , sandy, red, massive, slightly micaceous, small amount of gypsum.

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COMPANY GENERAL PETROLEUM CORP. LEASE GREAGER STATE #1406 WELL NO.

ELEVATION 5720' d.f. LOCATION: 330'N & 330'E of W 1/4 corner Sec. 6-19N-23E

SPUDED December 17, 1948

ABANDONED February 17, 1949
Abandoned:

TOP	BOTTOM	REC'D	FORMATION
2840	2850		<u>Siltstone</u> , red as above with fragments of green, shaley siltstone.
2850	2860		<u>Siltstone</u> , red, as above.
2860	2870		<u>Siltstone</u> , red, massive with sandstone, red and shale, red, fissile.
2870	2880		<u>Siltstone</u> , red with mottling of green.
2880	2890		No Sample.
2890	2898		<u>Siltstone</u> , as above.
2898	2902	4'	CORE #17 2898-2918' Rec. 20' <u>Sandstone</u> , dark red, very fine to fine with a few medium grains of mica, hard, angular to sub-angular, well sorted, indistinct bedding, massive, poor porosity, no apparent K.
2902	2903	1'	<u>Conglomerate</u> , dark grey, granule size with medium grains sandy matrix. Predominate minerals quartz, feldspar with gypsum and calcite veins and fragments of volcanic material.
2903	2911	8'	<u>Sandstone</u> , as described 2898'-2902' with floating granules of Dolomitic-Siliceous material, and shale, red, fissile.
2912	2913	1'	<u>Sandstone and shale</u> , as above with slickensides.
2913	2917	4'	<u>Sandstone</u> , as above, highly fractured, with floating grains of granule size particles. Particles are Dolomitic with siliceous centers and gypsum veins.
2917	2918	1'	<u>Sandstone</u> , as above, softer and with shale.
			(Entire core barren).
2919	2930		DARK red shaley <u>siltstone</u> with fragments of sandstone, white, fine. Siltstone contains siliceous dolomitic pebbles. Some gypsum, calcareous, matrix.
2930	2940		<u>Shale, siltstone</u> with white sandstone, as above.
2940	2950		<u>Shale, siltstone</u> , with sandstone and gypsum, as above.
2950	2960		<u>Siltstone</u> , dark red, shaley with siliceous dolomitic pebbles - some gypsum.

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COMPANY GENERAL PETROLEUM CORP. LEASE CREAGER STATE #14-6 WELL NO.

ELEVATION 5720' d.f. LOCATION: 330'N & 330'E of W 1/4 corner Sec. 6-19N-23E

SPUDDED December 17, 1948

~~COMPLETED~~
Abandoned:

February 17, 1949

TOP	BOTTOM	REC'D	FORMATION
2960	2970		<u>Siltstone</u> , dark red, as above.
2970	2980		<u>Siltstone</u> , dark red, as above.
2980	2990		No Sample.
2990	3000		<u>Siltstone</u> , as above, having a dark blue cast, micaceous.
3000	3010		<u>Siltstone</u> , as above.
3010	3020		<u>Siltstone</u> , dark red, massive with shale, red, fissile.
3020	3030		<u>Siltstone</u> , as above with a few fragments of limey material, green, hard.
3030	3045		No Samples.
CORE #18 3045'-3049' Rec. 2'			
Top 1 1/2'			<u>Siltstone</u> , shaley, red, hard with small veins of gypsum.
Bottom 6"			<u>Limestone</u> , green-grey, hard, Amorphous, bedding indistinct, poor porosity with mottling of siltstone, red. (Two cones lost in hole).
3050	3060		<u>Siltstone</u> , red with shale and green limestone.
3060	3070		<u>Siltstone</u> , dark red, massive with green limestone and red shale.
3070	3080		<u>Siltstone</u> , dark red, slightly micaceous with some shale and gypsum.
3080	3090		<u>Siltstone</u> , as above.
3090	3100		No Sample.
3100	3110		<u>Siltstone</u> , dark red, slightly micaceous with some gypsum.
3110	3120		<u>Siltstone</u> , dark red, hard, with green limestone and red shale, fissile.
3120	3130		<u>Siltstone</u> , as above.
3130	3140		<u>Siltstone</u> , as above.
3140	3150		<u>Siltstone</u> , as above with fragments of green limestone and shale partings.

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COMPANY GENERAL PETROLEUM CORP. LEASE CREAGER STATE #14-6 WELL NO.

ELEVATION 5720' d.f. LOCATION: 330'N & 330'E of W 1/4 corner Sec. 6-19N-23E
S.R. B&M

SPUDED December 17, 1948

Abandoned:

~~COMPLETED~~

February 17, 1949

TOP	BOTTOM	REC'D	FORMATION
3150	3160		<u>Siltstone</u> , as above.
3160	3170		<u>Siltstone</u> , red, shaley.
3170	3180		<u>Siltstone</u> , shaley, red, hard.
3180	3190		<u>Siltstone</u> , as above.
CORE #19 3192'-3196' Cut 4' Rec. 4'			
3192	3194	2'	<u>Sandstone</u> , red, very fine to fine, hard with siltstone, and shale, red, partings. Spots of green limestone.
3194	3196	2'	<u>Sandstone</u> , as above with floating grains of granule black quartz, slickensides.
3196	3210		No Samples.
3210	3220		<u>Sandstone</u> , light grey, medium to coarse, calcareous, with pyrite crystals.
3220	3230		<u>Sandstone</u> , as above with siltstone, red.
3230	3240		<u>Siltstone</u> , red, hard, with fragments of light grey sandstone, medium to coarse.
3240	3250		<u>Siltstone</u> , red, hard, with shale partings and a few spots of gypsum.
3250	3260		<u>Siltstone</u> , red as above with gypsum and Dolomite.
3260	3270		<u>Siltstone</u> , red, hard with gypsum and Dolomite.
3270	3280		<u>Siltstone</u> , as above with gypsum. No Dolomite.
3280	3290		<u>Siltstone</u> , as above with increased amount of gypsum.
3290	3292		<u>Siltstone</u> , as above with small amount of gypsum.
CORE #20 3292-3294' Cut 2' Rec. 8"			
			<u>Sandstone</u> , red, very fine to fine, hard, well sorted, some mica flakes, bedding indistinct, poor porosity, apparently little K. Vugs lined with white crystalline Calcite and green mottling of limestone. Red sandstone is slightly calcareous. Entire core barren.
3295	3300		<u>Sandstone</u> , red, very fine to fine, hard, with siltstone, and calcite.

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COMPANY GENERAL PETROLEUM CORP. LEASE GREAGER STATE #14-6 WELL NO.

ELEVATION 5720' d.f. LOCATION: 330'N & 330'E of W 1/4 corner Sec. 6-19N-23E
S.R. B&M

SPUDDED December 17, 1948

~~COMPLETED~~ February 17, 1949
Abandoned:

TOP	BOTTOM	REC'D	FORMATION
3300	3350		Sandstone, red, very fine, hard, as above with siltstone partings and calcite.
3350	3355		Sandstone, as above with fragments of non-weathered granitic material. TOP GRANITE 3353'
3355	3360		Biotite Granite
3360	3375		Biotite Granite, as above. CORE #21 3375'-3377' Cut 2' Rec. 0' CORE #22 3377'-3378' Cut 1' Rec. 1' Plus the 2' cut in Core #21 Biotite Granite Essential Minerals: 1. Quartz- pink and white, euhedral crystals up to 3 mm. 2. Potash feldspar - pink Characterizing Accessory Minerals: 1. Biotite - Black, platy. Minor Accessory Minerals: 1. Pyrite Secondary Minerals: 1. Chlorite as alteration of Biotite
3378	3400		Biotite Granite
3400	3410		Biotite Granite
3410	3420		Biotite Granite
3420	3430		Biotite Granite
			Drilling Break 3422'-3428' - Circulation Sample indicate no change. CORE #23 3431'-3432' Cut 1' Recovered only small fragments. Cutters were lost in the hole. Coring time for the one foot was 1 hour and 45 minutes. Biotite Granite: Material was finer grained but the same composition with minute veins of calcite.
			TOTAL DEPTH: 3432'

CP 44404

Shinerump
11/3 ✓

Operator: General Petroleum Corporation

Well No: Greaser-State #14-6

Location: 329°N & 348°E of W 1/4 corner - Sec. 6-T19N-R23E
Navajo County, Arizona (SW 1/4 SW 1/4 NW 1/4)

Elevation: 5720' (derrick floor)

Spud: December 17, 1948

Abandoned: February 17, 1949

TOTAL DEPTH: 3432'

Plugged Depth: 1493'

Junk: None

Geological Markers

Top Chinle	10'
Top Shinarump	593'
Top Moenkops	674'
Top Kaibab	1124'
Top Coconino	1127'
Top Supai	1590'
Top Granite	3353'

Casing Record

20" set at 12'
13-3/8" set at 775' with 597 sax

Electric Log Depths: Surface to 3432'

op 44404

Operator GENERAL PETROLEUM CORPORATION Field Navajo County (Ariz.)

Well No. Greager State 14-6 Sec. 6, T 19 N, R 23 E, G & S R B & M

Signed Silas Brown

Date March 29, 1949

Title Agent

This well was drilled by K. L. Kellogg and Sons, drilling contractors, using rotary equipment.

All measurements were taken from the kelly bushing 19.9' above the cellar wall.

1948

DRILLING AN EXPLORATORY WELL @

11-29
to
12-17

Rotary equipment was moved in and rigged up.

12-18
to
12-26

17-1/2" hole was spudded December 17, 1948, and drilled to 795', circulation having been lost and regained at 647' and 785'.

12-27
to
12-29

a Schlumberger electric log was run from 140' to 795'.

CEMENTING 13-3/8" CASING AT 795'

13-3/8" O.D., new, 54#, J-55, short T&C casing was cemented at 795' with 530 sac of El Toro construction cement, the 1st 300 sac being mixed with 3% Aquagel. Return circulation was spotty. (Mixing time 42 minutes, displacing time 30 minutes, slurry weight not recorded, final pressure 300#. Finished at 11:55 A.M. by Halliburton cementers.) 66 sac of cement was pumped in around the outside of the 13-3/8" casing, bringing cement to the surface.

The casing was landed in the cellar and the drilling control head installed. The casing was tested with 800# for 15 minutes. O.K.

12-30
to
2/5/49

12-1/4" hole was drilled and spot cored 795'/1320' and 11" hole drilled and spot cored 1320'/3432'. Circulation was lost and regained while drilling at 1100', 1136', 1498', 1507', 1570', 1633', 1658', and 2633'. No showings of oil or gas worthy of a test were encountered.

2-6 &
2-7

A Schlumberger electric log was run 795'/3432'.

44404

ABANDONING

BRIDGING WITH CEMENT 1630'/1515'

With open end drillpipe at 1630', one hundred sack of El Toro construction cement was pumped in and displaced. (Mixing time 24 minutes, displacement time 8 minutes, slurry 112%. Completed at 10:25 P.M. with rig pumps.) After approximately 8 hours, stringers of cement were found 1630'/1630'. 75 sack of El Toro construction cement, with 3% Aquafel flakes, was pumped in at 1630', and displaced with 19 barrels of mud. (Mixing time 25 minutes, displacing time 5 minutes. Completed at 2:55 P.M. with rig pumps.) After 11 hours and 50 minutes the top of the plug was located at 1515'. The locating of the plug at 1515' was witnessed by T. R. Cochran, of the Arizona Highway Patrol, and Loyd Baker, Deputy Sheriff. General Petroleum witness was Al Salsbury, drilling foreman.

2-8 The mud was circulated out of the hole from 1515' with water.

2-13 8 feet of 13-5/8" casing was welded on to the top of the existing 13-5/8" casing, bringing it to the ground level. The well was capped and abandoned February 13, 1949.

CONDITION OF HOLE AS ABANDONED

CASING RECORD: 13-5/8" cemented at 795' (No water shut-off test)

TOTAL DEPTH: 3432'

PLUGGED DEPTH: 1515'

JUNK: None

HOLE SIZE SUMMARY:

17-1/2" surface to 795'
12-1/4" 795'/1520'
11" 1520'/3432'

STATUS: Abandoned

B. K. Webb
March 29, 1949

0944404

TOP	BOTTOM	REQ'Y	FORMATION
<u>DITCH SAMPLES</u>			
0'	40'		Surface soil to 10' TOP CHINLE FORMATION AT 10' No samples taken.
40	50		<u>Sand</u> , white, fine to medium grained with shale, red, fissile.
50	60		<u>Sand</u> , white, medium to coarse with grey shale.
60	80		<u>Sand</u> , as above.
80	100		<u>Sand</u> , as above with considerable grey shale and much bentonite.
100	110		<u>Sand</u> , grey to white, medium to few coarse grains, round to sub-angular with some bentonite and shale.
110	130		<u>Sand</u> , as above.
130	140		<u>Sand</u> , as above. First electric log did not record above this point due to lack of fluid.
140	150		<u>Shale</u> , red, fissile.
150	160		<u>Shale</u> , red, fissile, with sand, white, coarse to medium, angular to sub-round.
160	180		<u>Sand and shale</u> , as above.
180	190		<u>Shale</u> , red, fissile, with minor sand and siltstone fragments.
190	200		<u>Sand</u> , white to grey, medium to coarse, angular to angular grains quartzitic composition.
200-	210		No Sample.
210	220		<u>Shale</u> , variegated color, fissile with sand, white, medium grained, sub-angular.
220	230		Variegated sandy <u>shale</u> (Painted Desert Section.)
230	240		Sandy <u>shale</u> , as above. Colors vary - white, grey, red, maroon.
240	250		Sandy <u>shale</u> , with streaks of siltstone, red, massive.

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TOP	BOTTOM	REG'T	FORMATION
250'	260'		Variegated <u>sandy shale</u> , as above with micaceous siltstone.
260	280		<u>Sandy shale</u> , as above with siltstone.
280	290		<u>Sand</u> , white, poorly indurated, sub-round, sub-angular, arkose composition.
290	300		<u>Sand</u> , as above, with variegated silty shale.
300	310		<u>Shale</u> , gray, red, white, fissile with sand, as above.
310	320		<u>Sand</u> , white to buff, poorly cemented, sub-angular, medium to coarse grains with shale, red and gray.
320	330		<u>Shale</u> , gray, fissile with white fragments of clay.
330	340		<u>Shale</u> , as above.
340	350		<u>Sand</u> , varied color - red predominate. Angular to sub-angular, fine to medium grained micaceous.
350	360		<u>Sand</u> , as above, with gray shale fragments.
360	370		<u>Sand</u> , as above with increase in shale.
370	380		<u>Shale</u> , red to gray fissile with sand, small amount, as above.
380	390		<u>Shale</u> , as above.
390	400		<u>Siltstone</u> , dark maroon, massive, with very fine crystals of sand, micaceous.
400	410		<u>Siltstone</u> , as above with bentonite.
410	420		<u>Siltstone</u> , very colored with little bentonite and few sand grains.
420	430		<u>Siltstone</u> , red, massive with fragments of white siltstone and some sand grains.
430	440		<u>Siltstone</u> , as above with bentonite.
440	450		<u>Siltstone</u> , as above with bentonite.
450	470		<u>Siltstone</u> , as above with bentonite. Survey at 470' 15 minutes.

CP 444 04

TOP	BOTTOM	REMARKS	FORMATION
470'	480'		<u>Siltstone</u> , as above.
480	490		<u>Siltstone</u> , dark maroon, massive, micaceous, with red (brick) shale, fissile.
490	500		<u>Siltstone</u> , as above with fragments of red shale and dark grey shale.
500	510		<u>Siltstone and shales</u> as above with increase of grey shale.
510	520		<u>Shale</u> , grey, dark fissile with grey and white siltstone.
520	540		<u>Shale and siltstone</u> , as above with bentonite.
540	550		<u>Shale</u> , grey, fissile with few conglomerate pebbles.
550	560		<u>Shale</u> , grey, fissile, with sand grains and much Cl., minor amount of siltstone, dark maroon, massive.
560	570		<u>Siltstone</u> , dark grey, massive with coarse crystals of quartz and chert disseminated through the silt matrix.
570	580		<u>Siltstone</u> , as above.
580	590		<u>Siltstone and shale</u> , variegated to dark red color, fissile, micaceous, bentonitic, few grains very fine, white sand.
590	600		<u>Sandstone</u> , white, poorly cemented, angular to sub-round, grains with streaks of red clay and shale. Sand is arkose. Schlumberger pick TOP OF SHINARUMP FORMATION AT 595 Ft.
600	610		<u>Sandstone</u> , as above with increase of grain size. Shale and clay present in smaller amount.
610	620		Red conglomerate pebbles, shale, angular with a few red chert fragments with sandstone matrix as above.
620	630		<u>Conglomerate</u> , buff to yellow color, arkose composition, granule grain size, sub-round to angular matrix. Sandstone, buff, poorly cemented.
630	640		<u>Conglomerate</u> , as above with increased amount of sandstone, arkose, grey to buff.

op 44464

TOP	BOTTOM	REMARKS	FORMATION
640'	650'		<u>Conglomerate and sandstone as above with small amount micaceous grey clay.</u>
650	660		<u>Conglomerate and sandstone, as above. (Poor sample)</u>
660	670		<u>Conglomerate and sandstone, as above.</u>
670	680		<u>Siltstone, dark red, massive. TOP OF MOENKOPF FORMATION at 674 ft.</u>
680	690		<u>Siltstone, as above with streaks of sandstone, white poorly cemented, porous, quartzitic.</u>
690	700		<u>Siltstone, as above without sand streaks.</u>
700	710		<u>Siltstone, dark red, as above with angular grains of buff, white, yellow arkose sand.</u>
710	720		<u>Siltstone, as above.</u>
720	730		<u>Siltstone, dark red to maroon, massive with streaks of shale, red, fissile.</u>
730	740		<u>Siltstone, as above.</u>
740	750		<u>Siltstone, as above.</u>
750	760		<u>Siltstone, as above with shale, brick red and sand, white, medium grained with cement of reddish material.</u>
760	770		<u>Shale and siltstone, brick red to maroon, micaceous.</u>
770	780		<u>Shale and siltstone, as above.</u>
780	785		<u>Siltstone, as above with high content of mica.</u>
785	790		<u>Siltstone, as above, micaceous, some shale.</u>
790	795		<u>Circulation sample at 795' siltstone, dull red with some fine to very fine grains of white arkose sand.</u>
795	800		<u>No sample - cement contamination - survey at 795 - 5 min.</u>
800	810		<u>Siltstone, as above.</u>
810	815		<u>Siltstone, as above.</u>

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TOP	BOTTOM	REG'Y	FORMATION
<u>CORE #1 815'-835' Rec. 20'</u>			
815	835	20'	<u>Siltstone</u> , mottled red and green, well indurated angular grains, well sorted, massive with white nodules of medium grained sand.
835	865		<u>Siltstone</u> , mottled red and green. In the red material mica is present in minor amounts with sand, white, fine grained.
<u>CORE #2 865'-885' Rec. 20'</u>			
865	885	20' (Top 11')	<u>Siltstone</u> , mottled red and green. Silt size to a few very fine grains of sub-angular to sub-round shape. Well indurated, well sorted. Predominate mineral Quartz, massive, tight.
		(Next 4')	<u>Siltstone</u> , red, other characteristics the same as above
		(Bottom 5')	The same as top 11 feet.
885	890		<u>Siltstone</u> , mottled red and green.
890	900		<u>Siltstone</u> , as above with gypsum in small amount.
900	910		<u>Siltstone</u> , as above and sand, brown, medium to fine grains with little gypsum.
910	920		<u>Sand</u> , brownish grey, medium to fine, porous, fair induration, arkose composition.
920	930		Drilling break indicated sand, as above, stopped at 924'. Then <u>siltstone</u> , brown-red with mica and considerable gypsum.
930	950		<u>Siltstone</u> , with gypsum, as above.
950	960		<u>Siltstone</u> , as above.
960	970		<u>Siltstone</u> , as above.
970	980		<u>Sand</u> , grey, fine to medium grained, angular to sub-round with <u>siltstone</u> , as above.
980	990		<u>Siltstone</u> , red, massive with shale partings and gypsum.
1000	1010		<u>Siltstone</u> , red to dark maroon. Red crystals of quartz are present in the silt matrix with gypsum and small amount of bentonite.

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TOP	BOTTOM	REC'D	FORMATION
1010	1020		<u>Siltstone</u> , as above with shale, red, fissile.
1020	1030		<u>Siltstone and shale</u> , as above, with sand, white, medium grained, micaceous.
1030	1040		<u>Siltstone, shale, and sand</u> , as above.
1040	1050		<u>Siltstone</u> , dark maroon, micaceous. Little gypsum.
1050	1060		<u>Siltstone</u> , as above with large quantities of gypsum. (The silt is calcareous.)
1060	1080		<u>Siltstone</u> , as above.
1080	1090		<u>Siltstone and shale</u> , red, gypsum present. Survey at 1087' hole vertical.
1090	1100		<u>Siltstone and shale</u> , as above with sand, brown-red, fine to medium, sub-angular grains, micaceous, calcareous.
			Circulation sample at 1100 feet. <u>Sand</u> , brownish-red, fine to medium, sub-angular grains, micaceous, calcareous.
1100	1120		<u>Sand</u> , as above.
1120	1125		<u>Sand</u> , as above with appearance of limestone in large amounts, little white chalk. Drilling time per foot slowed down. (Top of NAIRAB at 1124'.)
			Circulation Sample at 1127 feet. <u>Sand</u> , white, medium to a few coarse grains, massive, well indurated, angular to sub-angular, well sorted. Quartz predominate mineral. Fair porosity, fair K- Top of COCONINO at 1127 feet.
			<u>Core #3 1127-1147' Rec. 7'.</u>
1127	1140	0'	Missed.
1140	1147	7'	<u>Sand</u> , white, with slight brown stain, fine to medium grained, hard, sub-angular to rounded, well-sorted, quartz composition, cross bedded, tight. No show gas or oil.

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TOP	BOTTOM	REQ'Y	FORMATION
<u>CORE #4 1151-1162' Rec. 3'</u>			
			<u>Sand</u> , shale with slight brown stain, hard, rounded, well sorted, quartz predominate with mica in small flakes, bedding massive, fair porosity & K. (Mud invaded core) no fossils.
1162	--		Drilling ahead for 100 feet or to a drilling break from hard sand - then core.
1162	1200		<u>Sand</u> , white, with slight brown stain due to presence of flesh color quartz grains.
1200	1230		<u>Sand</u> , as above.
1230	1260		<u>Sand</u> , as above, with stringer or lenses of sand, flesh color, with same lithic characters as above. Survey at 1260 feet 30 minutes (0°30').
1260	1270		<u>Sand</u> , as above with increase in sand, flesh to red color, fine to few medium, sub-angular grains - color due to red quartz crystals, silica cement and small amount iron oxide.
1270	1280		<u>Sand</u> , white and flesh red, as above.
1280	1290		<u>Sand</u> , as above.
1290	1300		<u>Sand</u> , flesh red, fine to medium grained with sand, white. Circulation sample at 1300 feet. <u>Sand</u> , flesh red with minor amount sand, white, as above.
<u>CORE #5 1300-1320' Rec. 12'</u>			
1300	1305		Lost circulation while coring at 1305'. <u>Sand</u> , reddish to flesh brown, fine to medium, hard, sub-angular to sub-round, well sorted quartz, cross-bedded, fair porosity and K. All quartz grains are white.
1305	1312		Missing.
1312	1314		<u>Sand</u> , brick red, fine to medium grained, well sorted, quartz, bedding indistinct, fair porosity & K, quartz grains are red - translucent, iron oxide cement.
1315	1316		<u>Sand</u> , as above, with lenses of brownish-white sand, bedding distinct, flat.

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TOP	BOTTOM	REQ'D	FORMATION
<u>CORE #5 (continued)</u>			
1316	1319		Sand, as described 1300'-1305'.
1320	---		Missing.
1320	1350		<u>Sand</u> , as above.
1350	1353		<u>CORE #6 1350'-1370' Res. 9'</u> <u>Sand</u> , brick red, fine to medium, well indurated, rounded to sub-rounded with few sub-angular grains. Quartzite and Limonite predominate with some biotite. Bedding indistinct. Good porosity and K. No fossils, appears to be Nat.
1353	1355		<u>Sand</u> , as above with stringers of sand, with paler red color, also black carbon spots. (Do not give reaction with Carbon-Tet). Spots are found only in two inch zone.
1355			<u>Sand</u> , as above with red siltstone partings.
1357	1359		Sand, light brick red, other characters as of 1350-1353
1359	1370		Missing.
1370	1420		<u>Sand</u> , as above, in last core.
<u>CORE #7 1420'-1440' Res. 17'</u>			
1420	1437	17'	<u>Sand</u> , barren, brick red to flesh red, well indurated, rounded to sub-rounded with a few sub-angular grains, well sorted, quartz predominate mineral, bedding indistinct, good porosity and K, siltstone partings. (No show gas or oil.)
1437	1440	0'	Missing.
1440	1500		<u>Sand</u> , as above.
1500	1505		<u>Sand</u> , as above.
1505	1510		<u>Sand</u> , as above, with shale, purple, fissile partings.
1517	---		Circulation sample.
1510	1520		<u>Sand</u> , brick red to flesh red. Good porosity and K.
1520	1525		<u>Sand</u> , as above.
1525	1530		<u>Sand, Tar.</u> This is sand as described above with heavy Asphaltic material. Distribution spotty. Oats with carbon tetrachloride. Distinct black discoloration of fluid.
			<u>Sand</u> , as above. No tar found.

TOP	BOTTOM	REQ'Y	FORMATION
1530	----		Circulation sample. <u>Sand</u> , as above - No evidence of <u>Tar</u> .
			<u>CONE #8 1530'-1550' Rec. 8'.</u>
1530	1550	5'	<u>Sand</u> , brick red to lighter red, fine to medium, well indurated, well sorted with siltstone partings. Sand is barren. Good porosity and K. A show of gas bubbles appeared for a few minutes in the mud.
			<u>CONE #9 1550-1570' Rec. 17'.</u>
1550	1563	13'	<u>Sand</u> , well indurated, fine to medium, well sorted, frosted quartz with feldspar and mica in small amounts. Bedding indistinct. Good porosity & K, siltstone partings. - No show.
1564			<u>Sand</u> , as above, with brick red color.
1565	1567	2'	<u>Sand</u> , as top 13'. No show.
1568	1570	0'	Missing.
1570	1580		<u>Sand</u> , light red, fine to medium with quartz granules, white, frosted.
1585	1595		<u>Sand and quartz</u> , as above, with small amount of calcareous shale.
			<u>TOP SUPAI 1590'.</u>
1595	1600		Quartz granules as above with <u>shale</u> , red, fissile, limy.
1600	1625		Samples indicate decrease in amount of quartz and definite presence of shale, red, fissile, limy. Coring ahead to determine if not in the top of the Supai.
			<u>CONE #10 1625-1635' Rec. 10"</u>
1625			<u>Sand</u> , red, fine to medium, hard, quartz predominate mineral, good porosity and K. No show gas or oil. No taste or odor.
1625	1635		Missing. Lost circulation at 1627' and again at 1633'.
			Survey at 1625' 1°.
1635	1660		Due to lost circulation problem no returns were obtained that can be placed in the log. A few returns indicate: Sandstone, red with granules of quartz and a predominance of red, silty, micaceous shale.

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TOP	BOTTOM	REC'D	FORMATION
<u>CORE #11 1660'-1670' Rec. 10"</u> <u>"Wire Line - Mercury"</u>			
Top	4"		Cement
	6"		<u>Sandstone</u> , red, fine to medium, hard, angular to sub-angular, well sorted, quartz - bedding indistinct. Good porosity and K. No show, with spots of pure white sandstone with similar lithic character.
<u>CORE #12 1670'-1679' Rec. 6'</u> <u>"Wire Line - Mercury"</u>			
1670	1676	6'	<u>Sandstone</u> , dark red, fine to medium, fair induration, poorly sorted, quartz and iron oxide predominate. Porosity poor with spots of white sandstone, as above.
1676	1679	0'	Missing. No show gas - oil.
1679	1689		No sample.
1689	1700		<u>Sandstone</u> , shaley, dark red with white spots of sandstone.
1700	1710		Red shaley <u>sandstone</u> , as above.
1710	1730		<u>Some shale and sandstone</u> , as above.
1730	1740		Red <u>shale and sandstone</u> , as above, with green shale mottling.
1740	1760		<u>Shale</u> , red, fissile with few floating sand grains and mica.
1760	1780		<u>Shale</u> , red, as above.
1780	1800		<u>Shale</u> , red, fissile, as above.
1800	1810		<u>Shale</u> , red with green shale partings.
1815	1820		Red and green <u>shale</u> , as above.
1820	1830		<u>Shale</u> , red, fissile, with some silt grains.
1830	1840		<u>Shale</u> , red, as above.
1840	1850		<u>Shale</u> , red, fissile, with shale, green and gypsum.
1850	1863		<u>Shale</u> , as above, with gypsum.

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TOP	BOTTOM	REG'Y	FORMATION
<u>CORE #13 1883-1983 Res. 20'</u>			
1883	1983	20'	<u>Shale</u> , red and green mottled, with red color predominate, silt to a few very fine grains, hard, well sorted, micaceous, fissile. Tight, veins of gypsum up to 1/2" in thickness. No show gas or oil.
1883	1900		<u>Shale</u> , red and green with gypsum, as above.
1900	1910		<u>Shale</u> , as above.
1910	1920		No sample.
1920	1940		<u>Shale</u> , red with gypsum and green shale, as above.
1940	1950		<u>Shale</u> , green, fissile with some fine sandstone, red.
1950	1980		<u>Sandstone</u> , red with green and red shale and siltstone. Some gypsum.
1980	1980		<u>Sandstone</u> , as above.
1980	2000		<u>Sandstone</u> , with shale and siltstone, as above.
2000	2010		<u>Sandstone</u> , with shale and siltstone, as above, and white sandstone medium grained, silica cement
2010	2050		<u>Sandstone</u> , as above.
2050	2050		<u>Sandstone</u> , with shale and siltstone, as above, white, medium sandstone.
<u>CORE #14 2050-2070' Res. 20'</u>			
2050	2060	10'	<u>Sandstone</u> , red, very fine to fine, soft, well sorted quartz and mica with large amount Limonite cement. Bedding indistinct with partings of red clay. Poor porosity, no K.
2060	2070	10'	<u>Sandstone</u> , as above with partings of sandstone, grey-green, hard, Quartz, tight, - Sandstone contains salt. Entire Core barren.
2070	2115		No Samples taken.
2115	2125		<u>Sandstone</u> , as above, with green and red shale, fissile. Silt particles and clay, red, iron oxide matrix. (cemented).
2125	2135		<u>Shale</u> , grey-green, fissile with clay and silt, red.

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TOP	BOTTOM	REC'T	FORMATION
2135	2145		<u>Shale</u> , grey-green, fissile, calcareous, with decrease in clay and silt.
2145	2155		<u>Shale</u> , grey-green, fissile, slightly calcareous.
2155	2160		<u>Shale</u> , grey-green, fissile, slightly calcareous, with silt to very fine particles floating.
2160	2170		<u>Shale</u> , as above with sandstone, very fine to medium, highly calcareous.
2170	2180		<u>Shale</u> , with sandstone, calcareous, as above.
2180	2190		<u>Shale</u> , grey-green, fissile with sandstone, grey, fine to medium, highly calcareous.
2190	2200		<u>Shale</u> , with sandstone, as above.
2200	2210		<u>Shale</u> , grey-green, fissile, small amount sandstone and siltstone, slightly micaceous.
2210	2230		<u>Shale and siltstone</u> , as above with presence of red siltstone.
2230	2250		<u>Siltstone</u> , red, massive, with small amount shale, grey-green, fissile.
2250	2260		<u>Siltstone</u> , grey-green with some red and shale, grey-green, fissile.
2260	2270		<u>Siltstone</u> , as above, with sandstone, green, medium grains, glauconitic.
2270	2290		<u>Siltstone</u> , as above, with shale.
2290	2300		<u>Siltstone</u> , as above with shale.
2300	2320		<u>Siltstone</u> , as above, some shale.
2320	2330		<u>Siltstone</u> , with shale, as above.
2330	2340		<u>Siltstone</u> , grey-green, with some red and green shale, calcareous.
2340	2350		<u>Siltstone and shale</u> , as above.
2350	2360		<u>Siltstone and shale</u> , as above.

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TOP	BOTTOM	REMARKS	FORMATION
2360	2370		<u>Siltstone and shale, as above.</u>
2370	2380		<u>Siltstone and shale, as above, shale has salty taste</u>
2380	2390		<u>Siltstone, as above, with salty taste with fragments of black siltstone.</u>
2390	2400		<u>Siltstone, as above.</u>
2400	2410		<u>Siltstone, as above, grey-green and black with minor amount red shaley siltstone.</u>
2412	2420		<u>Siltstone and sandstone, grey-green and red massive with minor amount red shale partings.</u>
2420	2430		<u>Siltstone, red, massive, with green siltstone with sandstone, red, very fine to fine.</u>
2430	2440		<u>Siltstone with sandstone, as above with more green.</u>
2440	2450		<u>Siltstone with sandstone, as above (Mud contains sand grains that are not Coccineo and may be bedded within the siltstone.)</u>
2450	2460		<u>Siltstone, as above with the above sand very fine to fine, white to reddish.</u>
2460	2470		<u>Siltstone, as above and sandstone.</u>
2470	2480		<u>Siltstone, grey-green with floating grains of quartz, granule size with minor amount of red shale and siltstone and sandstone.</u>
2480	2490		<u>Siltstone and sandstone, grey-green, as above.</u>
2490	2500		<u>Siltstone, red and grey-green as above.</u>
2500	2520		<u>Siltstone and sandstone, red with green mottling. Mottling due to salt content.</u>
2520	2530		<u>Siltstone and sandstone, as above.</u>

CORE #15 2530'-2550' Sec. 4'

Unable to determine missing section.

Sandstone, red, very fine to a few fine grains. Fair induration, well sorted, quartz mica, and Limestone predominate, bedding indistinct, poor porosity and K with partings of silty micaceous shale and green spots of salt. (No show.)

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TOP	BOTTOM	REC'Y	FORMATION
2550	2560		<u>Sandstone</u> , red, very fine to fine with siltstone and shale partings. Few spots of salt.
2560	2570		<u>Sandstone</u> , with siltstone, shale and salt, as above.
2570	2580		<u>Sandstone</u> , with siltstone, shale and salt, as above.
2580	2600		<u>Sandstone</u> , with siltstone, as above and sandstone, pure white. (Small spots within the red.)
2600	2610		<u>Sandstone</u> , with siltstone, as above.
2610	2620		<u>Siltstone</u> , red to gray-green with sandstone.
2620	2630		<u>Sandstone</u> , red, very fine to fine, with siltstone and shale, red.
2630	2640		Lost circulation. Returns no good.
2640	2650		<u>Sandstone</u> , red, very fine to fine with siltstone, red, massive and shale, red, fissile, with a few spots of green color salt.
2650	2660		<u>Sandstone</u> with siltstone and shale, as above.
2660	2670		<u>Sandstone</u> , as above with shale, dark gray, fissile, hard.
2670	2680		<u>Sandstone and siltstone</u> , xxx with some shale.
2680	2690		<u>Sandstone</u> , red, very fine to fine.
2690	2700		<u>Sandstone</u> , red, as above, with sandy shale, dark gray, fissile, with floating quartz grains. (Drilled about 5 times as hard as material above 26000.)

CORE #14 2700'-2717' Rec. 2'

2700 2707 7'
(Top 3')

Sandstone, red, very fine to fine, hard, angular to sub-angular grains, well sorted, Quartz with mica cement by Silica and Limonite - bedding indistinct, porosity poor with siltstone partings and spots of green salt.

(Bottom 4')

Top 6" - Sandstone, white, very fine, very hard, angular to sub-angular, Quartz with Mica (Biotite) - Silica cement. No bedding - No porosity or K.

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TOP BOTTOM REC'Y

FORMATION

CORE #16 (continued)

Next 2 feet	-	<u>Sandstone</u> , red, very fine to fine with siltstone as in top 3' of core.
Next 6"		<u>Sandstone</u> , grey-green, very fine to fine, very hard, angular to sub-angular. Quartz Silica cement. Cross bedded, no porosity or K. Mottling of colors.
Bottom Foot		<u>Sandstone</u> , red, as above, with siltstone, salt.
2707	2717	Missing. (Entire Core Barren)
2720	2730	<u>Sandstone</u> , red, very fine to fine, hard with siltstone and green spots. Fragments of hard, grey-green and white sandstone, as above.
2730	2740	<u>Sandstone</u> , as above.
2740	2750	<u>Sandstone</u> , as above.
2750	2760	<u>Sandstone</u> , red, hard with red siltstone and a few fragments of hard, fissile, black shale.
2760	2770	<u>Siltstone</u> , sandy, red, massive, hard, with fragments of black shale and hard silica cement white-grey sandstone.
2770	2780	<u>Sandy siltstone</u> , red with shale and white sandstone, as above.
2780	2790	<u>Sandy siltstone</u> , red as above.
2790	2800	<u>Siltstone</u> , sandy red, massive with shale.
2800	2810	<u>Siltstone</u> , sandy, dark red, massive, hard with fragments of white sandstone.
2810	2820	<u>Siltstone</u> , with sandstone, red, massive, hard, few green spots. (Do not have salty taste here.)
2820	2830	Poor Sample - appears to be siltstone, as above.
2830	2840	<u>Siltstone</u> , sandy, red, massive, slightly micaceous, small amount of gypsum.

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TOP	BOTTOM	REC'T	FORMATION
2840	2850		<u>Siltstone</u> , red as above with fragments of green, shaley siltstone.
2850	2860		<u>Siltstone</u> , red, as above.
2860	2870		<u>Siltstone</u> , red, massive, with sandstone, red and shale, red, fissile.
2870	2880		<u>Siltstone</u> , red with mottling of green.
2880	2890		No Sample.
2890	2898		<u>Siltstone</u> , as above.
<u>CORE #17 2898-2918' Rec. 20'</u>			
2898	2902	4'	<u>Sandstone</u> , dark red, very fine to fine with a few medium grains of mica, hard, angular to sub-angular, well sorted, indistinct bedding, massive, poor porosity, no apparent K.
2902	2903	1'	<u>Conglomerate</u> , dark grey, granule size with medium grains, sandy matrix. Predominate minerals quartz, feldspar, with gypsum and calcite veins and fragments of volcanic material.
2903	2911	8'	<u>Sandstone</u> , as described 2898'-2902' with floating granules of Dolomitic-Siliceous material, and shale, red, fissile.
2912	2913	1'	<u>Sandstone and shale</u> , as above with slickensides.
2913	2917	4'	<u>Sandstone</u> , as above, highly fractured, with floating grains of granule size particles. Particles are Dolomitic with siliceous centers and gypsum veins.
2917	2918	1'	<u>Sandstone</u> , as above, softer and with shale. (Entire core barren.)
2919	2930		DARK red shaley <u>siltstone</u> with fragments of sandstone, white, fine. Siltstone contains siliceous dolomitic pebbles. Some gypsum, calcareous, matrix.
2930	2940		<u>Shale, siltstone</u> , with white sandstone, as above.
2940	2950		<u>Shale, siltstone</u> , with sandstone and gypsum, as above.
2950	2960		<u>Siltstone</u> , dark red, shaley with siliceous dolomitic pebbles - some gypsum.

TOP	BOTTOM	REC'T	FORMATION
2960	2970		<u>Siltstone</u> , dark red, as above.
2970	2980		<u>Siltstone</u> , dark red, as above.
2980	2990		No Sample.
2990	3000		<u>Siltstone</u> , as above, having a dark blue cast, micaceous.
3000	3010		<u>Siltstone</u> , as above.
3010	3020		<u>Siltstone</u> , dark red, massive with shale, red, fissile.
3020	3030		<u>Siltstone</u> , as above with a few fragments of limy material, green, hard.
3030	3045		No Samples.

CORE #19 3045'-3049' Rec. 2'

Top	1 1/2'	<u>Siltstone</u> , shaley, red, hard, with small veins of gypsum.
Bottom	6"	<u>Limestone</u> , green-gray, hard, amorphous, bedding indistinct, poor porosity with mottling of siltstone, red. (Two cones lost in hole.)
3050	3060	<u>Siltstone</u> , red with shale and green limestone.
3060	3070	<u>Siltstone</u> , dark red, massive with green limestone and red shale.
3070	3080	<u>Siltstone</u> , dark red, slightly micaceous with some shale and gypsum.
3080	3090	<u>Siltstone</u> , as above.
3090	3100	No Sample.
3100	3110	<u>Siltstone</u> , dark red, slightly micaceous with some gypsum.
3110	3120	<u>Siltstone</u> , dark red, hard, with green limestone and red shale, fissile.
3120	3130	<u>Siltstone</u> , as above.
3130	3140	<u>Siltstone</u> , as above.
3140	3150	<u>Siltstone</u> , as above with fragments of green limestone and shale partings.

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TOP	BOTTOM	REQ'T	FORMATION
3150	3160		<u>Siltstone</u> , as above.
3160	3170		<u>Siltstone</u> , red, shaley.
3170	3180		<u>Siltstone</u> , shaley, red, hard.
3180	3190		<u>Siltstone</u> , as above.
<u>CORE #19 3192'-3196' Out. 4' Rec. 4'</u>			
3192	3194	2'	<u>Sandstone</u> , red, very fine to fine, hard with siltstone, and shale, red, partings. Spots of green limestone.
3194	3196	2'	<u>Sandstone</u> , as above, with floating grains of granule black quartz, slickensides.
3196	3210		No Samples.
3210	3220		<u>Sandstone</u> , light gray, medium to coarse, calcareous, with pyrite crystals.
3220	3230		<u>Sandstone</u> , as above, with siltstone, red.
3230	3240		<u>Siltstone</u> , red, hard, with fragments of light gray sandstone, medium to coarse.
3240	3250		<u>Siltstone</u> , red, hard, with shale partings and a few spots of gypsum.
3250	3260		<u>Siltstone</u> , red as above with gypsum and Dolomite.
3260	3270		<u>Siltstone</u> , red, hard, with gypsum and Dolomite.
3270	3280		<u>Siltstone</u> , as above, with gypsum. No Dolomite.
3280	3290		<u>Siltstone</u> , as above, with increased amount of gypsum.
3290	3292		<u>Siltstone</u> , as above, with small amount of gypsum.
<u>CORE #20 3292-3294' Out 2' Rec. 6'</u>			
			<u>Sandstone</u> , red, very fine to fine, hard, well sorted, some mica flakes, bedding indistinct, poor porosity, apparently little K. Vugs lined with white crystalline Calcite and green mottling of limestone. Red sandstone is slightly calcareous. Entire core barren.
3295	3300		<u>Sandstone</u> , red, very fine to fine, hard, with siltstone and calcite.

TOP	BOTTOM	REC'T	FORMATION
3300	3350		<u>Sandstone</u> , red, very fine, hard, as above, with siltstone partings and calcite.
3350	3355		<u>Sandstone</u> , as above, with fragments of non-weathered granitic material. <u>TOP GRANITE 3355'</u>
3355	3360		<u>Biotite Granite</u>
3360	3375		<u>Biotite Granite</u> , as above.
<u>CORE #21 3375'-3377' Out 2' Rec. 0'</u>			
<u>CORE #22 3377'-3378' Out 1' Rec. 1'</u> <u>Plus the 2' out in Core #21</u>			
<u>Biotite Granite</u>			
<u>Essential Minerals:</u>			
1. Quartz - pink and white, euhedral crystals up to 3 mm.			
2. Potash feldspar - pink			
<u>Characterizing Accessory Minerals:</u>			
1. Biotite - black, platy.			
<u>Minor Accessory Minerals:</u>			
1. Pyrite			
<u>Secondary Minerals:</u>			
1. Chlorite as alteration of Biotite			
3378	3400		<u>Biotite Granite</u>
3400	3410		<u>Biotite Granite</u>
3410	3420		<u>Biotite Granite</u>
3420	3430		<u>Biotite Granite</u>
<u>Drilling Break 3422'-3423' - Circulation Sample indicates no change.</u>			
<u>CORE #23 3431'-3432' Out 1'</u>			
Recovered only small fragments. Cutters were lost in the hole.			
Coring time for the one foot was 1 hour and 45 min.			
<u>Biotite Granite: Material was finer grained, but the same composition with minute veins of calcite.</u>			
<u>TOTAL DEPTH: 3432'</u>			

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General Petroleum - Oranger State #14 - 6 (sec. 6. T. 19 N. R. 23 E.)
by Ed. Kocer and assistants

Formation	Depth (feet)	Thickness	Name	Color	Texture	Cement	Matrix	Comments
	50		siltstone	pale red (5R 6/2)	aphanitic			chart fragments
	60		sandstone	do.	very fine	lime		
	70		do.	do.	do.	do.		
	80		do.	do.	fine	do.		fine quartz particles
	110		do.	grayish pink	do.	do.		some chert
	120		do.	do.	very fine	do.		
	130		limestone	pale red purple	aphanitic	do.		some chert, some sandstone with lime cement
	140		sandstone	do.	fine	do.		some grayish-blue limestone
	150		do.	pale red	do.	do.		some quartz
	160		do.	pale red purple	do.	do.		some chert
	170		do.	grayish orange pink	very fine	do.		contains some limestone
	180		do.	do.	fine	do.		do.
	190		do.	pale red purple	do.	do.		do.
	200		limestone	very pale orange	aphanitic			contains some quartz and some fine grain sandstone

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General Petroleum - Cragger State #14-6 - Cont.

Formation	Depth (feet)	Thickness	Name	Color	Texture	Comment	Notes	Comments
	220		sandstone	pale pink to pale red purple	medium	lime		
	230		claystone	grayish red purple	aphanitic			some chert
	240		sandstone	grayish orange pink	medium	lime		some limestone
	250		do.	do.	do.	do.		contains some claystone
	260		claystone	pale red (5R 6/2)	aphanitic			contains some limestone
	280		do.	do.	fine			
	290		sandstone	grayish orange pink	do.			contains some claystone
	300		claystone	pale red	aphanitic			contains some limestone
	310		do.	medium dark gray	do.			contains some limestone and quartz. Gravel
	320		sandstone	grayish pink	medium			contains quartz
	330		claystone	medium dark gray	aphanitic			
	340		do.	medium gray	fine			contains some sandstone
	350		Bentonite	do.	aphanitic			contains some quartz

General Petroleum - Greaser State #14-6 - Cont.

Formation	Depth (feet)	Thickness	Name	Color	Texture	Cement	Matrix	Comments
	360		Devonian limestone	grayish red	arenaceous			
	370		sandstone	do.	medium	lime		contains white claystone and quartz
	380		do.	pale red (10R 6/2)	fine			contains gray claystone and quartz
	390		do.	pale red (5R 6/2)	medium			contains quartz
	400		do.	grayish pink	medium			some white and gray claystone
	410		do.	pale red	fine			contains quartz and claystone
	420		claystone	grayish red purple	very fine			some sandstone with quartz
	430		do.	do.	arenaceous			do.
	440		sandstone	pale red	fine			quartz and some claystone
	450		do.	do.	do.			quartz, limestone and claystone
	460		claystone	bluish red	arenaceous			quartz
	470		do.	grayish red and white	do.			quartz and some limestone, some sandstone

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General Petroleum - Greager State #14-6 - Cont.

Formation	Depth (feet)	Thickness	Name	Color	Texture	Content	Notes
	480		claystone	grayish red and bluish white	ephemitic		quartz and sandstone
	490		do.	grayish red purple	do.		quartz
	500		do.	pale blue and pale purple	do.		do.
	510		do.	pale blue	do.		do.
	520		do.	light bluish gray	do.		some sandstone and quartz
	530		do.	do.	do.		do.
	540		do.	light grayish blue	do.		quartz
	550		do.	do.	do.		some sandstone
	560		do.	light bluish gray	do.		
	570		do.	medium gray	do.		
	580		do.	do.	do.		

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General Petroleum - Oregon State #14-6 - Cont.

Formation	Depth (feet)	Thickness	Name	Color	Texture	Comment	Notes
	590		Claystone	Medium light gray	Aphanitic		Some purple-red claystone
	600		do.	do.	do.		quartz
	610		do.	do.	do.		
	620		do.	Pale blue	do.		
	630		do.	Medium light gray	do.		Large amount of quartz
	640		do.	Pale yellowish brown	do.		Large amount of quartz and some fine sand
	650		do.	Medium light gray	do.		quartz
	660		do.	do.	do.		some quartz
	670		do.	Yellowish gray	do.		quartz
	680		do.	Grayish red	do.		some quartz
	690		do.	Grayish red (5F 4/2)	do.		some quartz and pale yellowish-green claystone
	700		do.	Grayish red purple	do.		some quartz
	710		do.	do.	do.		some quartz, some medium gray claystone

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General Petroleum - Cregar State #14-6 - Cont.

Formation	Depth (feet)	Thickness	Name	Color	Texture	Cement	Notes	Comments
	720		claystone	grayish red purple	aphanitic			some quartz
	730		do.	grayish red	do.			some quartz, some medium gray claystone
	740		siltstone	do.	do.			some medium gray claystone
	750		do.	do.	do.			contains quartz
	760		claystone	light bluish gray	do.			contains some quartz - moderate red siltstone
	770		siltstone	medium red	do.			bluish contains quartz and light gray claystone
	780		claystone	grayish red	do.			contains some quartz and light bluish gray claystone
	790		sandstone	moderate red	fine sand	lime		some medium gray claystone
	795		claystone	grayish red	aphanitic			some quartz, contains moderate red fine sandstone and blue-gray claystone
	800		sandstone	moderate red	very fine	lime		some quartz, some grayish red claystone and some bluish gray claystone
	810		do.	pale red	do.	do.		some white, very fine sandstone
	815		do.	do.	fine	do.		do.

General Petroleum - Oregon State #14-6 - Cont.

Formation	Depth (feet)	Thickness	Rock	Color	Texture	Grain	Matrix	Comments
	875		sandstone	moderate red	very fine	fine		some very pale green. fine sandstone
	840		do.	pale red (10R 6/2)	do.	do.		do.
	830		do.	pale reddish brown	do.	do.		contains also medium gray sandstone
	860		do.	pale red (5R 6/2)	fine	do.		contains some light bluish gray sandstone
	870		siltstone	light grayish red (5R 4/2)	silt	do.		do.
	885		do.	grayish red (5R 4/2)	do.	do.		
	890		sandstone	pale reddish brown	very fine	do.		contains some bluish gray sandstone
	900		do.	pale red (10R 6/2)	fine	do.		
	910		do.	pale red (5R 6/2)	do.	do.		
	920		do.	do.	do.	do.		
	930		siltstone	pale reddish brown	silt	do.		

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General Petroleum - Orange State #14-6 - Cont.

Formation	Depth (feet)	Thickness	Usage	Color	Texture	Cement	Notes	Comments
	940		siltstone	pale red (5R)	silt	lime		same pale green sandstone as 935 ft.
	950		sandstone	pale red	very fine	do.		do.
	960		do.	do.	do.	do.		same as 950 ft.
	970		siltstone	grayish red	-	do.		same green sandstone
	980		sandstone	pale red (10R)	very fine	do.		
	990		do.	pale red (5R)	do.			
	1000		siltstone	do.		lime		
	1010		do.	do.		do.		some quartz
	1020		do.	grayish red (5R)		do.		
	1030		do.	do.		do.		
	1040		do.	do.		do.		
	1050		do.	do.		do.		
	1060		do.	do.		some lime		some gray claystone
	1070		do.	do.		lime		contains white claystone
	1080		sandstone	pale red (5R)	very fine	do.		

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General Petroleum - Creager State #11-6 - Cont.

Formation	Depth (feet)	Thickness	Name	Color	Texture	Cement	Matrix	Comments
	1090		siltstone	grayish red (5R)		lime		contains white siltstone
	1100		sandstone	pale red (10R)	very fine	do.		
	1110		do.	grayish pink	fine	do.		
	1120		do.	do.	do.	do.		contains some grayish-red siltstone
	1147		do.	grayish orange pink	do.			well sorted, friable
	1162		do.	do.	do.			do.
	1170		do.	pale red (10R)	very fine	lime		poorly sorted
	1190		do.	grayish pink	medium	do.		
	1200		do.	grayish orange pink	fine			contains grayish-red siltstone
	1210		do.	do.	do.			do.
	1220		do.	grayish pink	do.			contains grayish-red siltstone with lime
	1230		do.	grayish pink (5R)	do.			well sorted

General Petroleum - Creager State #14-6 - Cont.

Formation	Depth (feet)	Thickness	Name	Color	Texture	Content	Notes
	1240		sandstone	grayish orange pink			contains some mixture of claystone and siltstone
	1250		do.	grayish pink	very fine	lime	contains grayish-red siltstone
	1260		siltstone	grayish red		do.	contains some grayish-pink sandstone
	1270		do.	do.		do.	do.
	1280		claystone	do.		do.	do.
	1290		sandstone	grayish pink	fine		also grayish-red claystone
	1300		do.	do.	do.		do.
	1320		do.	pale red (SR)	very fine		
	1360		do.	grayish pink	fine		contains grayish-red claystone with lime cement
	1370		do.	moderate orange pink	medium fine sand		well sorted
	1380		do.	do.	fine	lime	contains some grayish-red claystone
	1390		do.	do.	do.		contains some grayish-red sandstone
	1400		do.	do.	do.		do.

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General Petroleum - Greaser State #14-6 - Cont.

Formation	Depth (feet)	Thickness	Name	Color	Texture	Cement	Matrix	Comments
	1410		sandstone	moderate orange	fine			some grayish-red sandstone and medium bluish gray claystone
	1420		do.	moderate orange pink (10R)	do.			
	1430		do.	moderate orange pink (5YR)	do.			contains some grayish-red claystone
	1440		do.	do.	very fine	lime		do.
	1450		do.	do.	fine	do.		some grayish-red siltstone
	1460		do.	moderate orange pink (10R)	very fine	do.		
	1470		do.	do.	do.	do.		same as 1460
	1480		do.	do.	do.	do.		do.
	1490		do.	moderate orange pink (5YR)	do.	do.		do.
	1500		do.	moderate orange pink (10R)	do.	do.		same as 1460 and pale yellowish-green siltstone
	1510		do.	moderate orange pink (5R)	do.	iron oxide		some pale yellowish green siltstone, and some reddish gray siltstone

General Petroleum - Greager State #14-6 - Cont.

Formation	Depth (feet)	Thickness	Rock	Color	Texture	Cement	Notes	Comments
	1530		sandstone	moderate orange pink (10R)	very fine	iron oxide		some reddish-gray siltstone, quartz crystals, weak cement
	1550		do.	do.	do.	do.		very well sorted quartz crystals, weak cement
	1560		do.	moderate orange pink (5R)	fine	do.		some reddish-gray siltstone and some medium bluish gray siltstone with lime
	1570		do.	moderate orange pink (10R)	do.	do.		some reddish-gray siltstone quartz crystals, weak cement
	1580		siltstone	pale red (10R)		lime		same of 1570'
	1590		do.	do.		do.		contains sandstone of 1570'
	1600		sandstone	moderate orange pink (5R)	fine	iron oxide		contains siltstone of 1580', quartz crystals
	1610		do.	moderate orange pink (10R)	do.	do.		contains siltstone of 1580', white quartz, weak cement
	1620		siltstone	do.				
	1630		sandstone	moderate red	fine sand+	iron oxide		well sorted & quartz crystals
	1640		do.	moderate orange pink (10R)	very fine	do.		siltstone of 1580', quartz crystals, weak cement

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General Petroleum - Greaser State #14-6 - Cont.

Formation	Depth (feet)	Thickness	Rock	Color	Texture	Cement	Notes	Comments
	1645		siltstone	grayish red (5R)		lime		sandstone of 1570'
	1670		sandstone	moderate orange pink (10R)	fine +	iron oxide		well sorted quartz crystals, weak cement
	1671		do.	pale red (5R)	very fine	do.		ixture of white claystone with grayish red siltstone
	1700		do.	moderate orange pink	do.	lime		siltstone of 1580'
	1710		do.	grayish orange pink	do.	do.		some 1580' siltstone
	1720		siltstone	pale red		do.		sandstone of 1580'
	1730		sandstone	pale red (5R)	very fine	lime		contains 1570' sandstone
	1740		claystone	do.		do.		do.
	1750		siltstone	pale red				contains very fine grayish-pink sandstone
	1760		do.	do.	lime			contains very light gray claystone & 1570' sandstone
	1770		sandstone	moderate orange pink	fine	do.		same as 1570'
	1780		do.	do.	do.			contains siltstone of 1580'

General Petroleum - Creager State #14-6 - Cont.

Formation	Depth (feet)	Thickness	Name	Color	Texture	Comment	Notes
	1790		sandstone	moderate orange pink	fine		contains siltstone of 1580'
	1800		do.	do.	do.	lime	contains grayish-red siltstone of 1580'
	1810		siltstone	pale red (5R)		do.	contains sandstone of 1570'
	1820		sandstone	moderate orange pink	fine	do.	contains siltstone of 1580'
	1830		do.	do.	do.	do.	do.
	1840		do.	grayish orange pink	very fine	do.	contains 1580' siltstone, very pale green siltstone, and some bentonite
	1850		do.	moderate orange pink	do.	do.	contains 1580' siltstone and some medium gray quartz and some bentonite
	1860		do.	grayish orange	do.	do.	contains medium gray quartz
	1880		do.	grayish orange pink	do.		white leaching spots and pure crystalline gypsum
	1890		do.	do.	do.		contains medium gray quartz
	1900		siltstone	pale red (10R)			contains medium gray quartz and 1570' sandstone

General Petroleum - Greager State #14-6 - Cont.

Formation	Depth (feet)	Thickness	Name	Color	Texture	Content	Notes	Comments
	1910		sandstone	moderate orange pink	very fine			contains medium gray quartz and 1580' siltstone
	1940		siltstone	grayish pink				very friable and medium gray quartz
	1960		sandstone	grayish pink	very fine	lime		contains grayish black quartz
	1970		do.	do.	do.	do.		contains grayish-orange pink claystone
	1980		do.	pale red	do.	do.		do.
	1990		do.	grayish pink	do.	do.		some siltstone
	2000		do.	do.	do.			some grayish-black quartz and pale red siltstone
	2010		do.	pale red	do.	lime		some grayish-black quartz and grayish orange pink siltstone
	2020		do.	grayish pink	do.	do.		some grayish-black quartz and grayish pink claystone
	2030		siltstone	do.		do.		
	2040		do.	grayish orange pink		do.		some claystone
	2050		do.	pale red		do.		some graystone

General Petrology - Creager State #14-6 - Cont.

Formation	Depth (feet)	Thickness	Name	Color	Texture	Comment	Notes
	2070		siltstone	pale red (5B)			
	2145		sandstone	moderate orange pink (10B)	fine	lime	contains some pale red siltstone
	2155		siltstone	do.		do.	contains some grayish blue claystone
	2160		shale	light bluish gray	aphanitic		
	2170		do.	do.		do.	contains some pale red sandstone
	2180		do.	do.		do.	contains some bluish white claystone
	2190		do.	grayish orange pink	do.		contains some pale red sandstone
	2200		sandstone	moderate orange pink	fine	lime	well sorted
	2210		do.	grayish pink	very fine		some light bluish-gray siltstone
	2220		do.	pale red (5B)	fine		
	2230		do.	grayish orange pink	very fine		

General Petroleum - Oregon State #14-6 - Cont.

Hor- tion	Depth (feet)	Thickness	Name	Color	Texture	Cement	Notes	Comments
	2240		sandstone	grayish orange pink	very fine			contains some quartzite
	2250		do.	moderate orange pink (5YR)	do.	iron oxide		
	2260		do.	grayish orange pink (5YR)	do.	lime		contains some siltstone
	2270		do.	do.	do.	do.		do.
	2280		mudstone	do.		iron oxide		contains some pale red siltstone
	2290		do.	moderate orange pink		lime		
	2300		do.	do.		weak lime		some pale red mudstone
	2310		do.	pale red (5R)		iron oxide		contains mudstone of 2300' and basalt fragments
	2320		do.	do.		do.		do.
	2330		siltstone	grayish orange pink				contains pale red mudstone of 2310'
	2340		do.	do.		lime		contains some pale red mudstone

General Petroleum - Greager State #14-6 - Cont.

Formation	Depth (feet)	Thickness	Rock	Color	Texture	Content	Notes
	2350		sandstone	moderate orange pink (5YR)	very fine	iron oxide	some pale red sandstone and basalt fragments
	2360		claystone	pale red (5R)	aphanitic	iron oxide	similar to 2350'
	2370		sandstone	moderate orange pink (10R)	very fine	do.	some basalt fragments
	2380		claystone	medium orange pink (5YR)			contains pale red sandstone
	2390		sandstone	moderate orange pink	very fine	iron oxide	contains pale red sandstone
	2400		siltstone	pale red (5R)		iron oxide	some basalt fragments
	2410		do.	moderate orange pink (10R)			contains some pale red siltstone, basalt
	2430		do.	grayish orange pink (5YR)			some basalt fragments
	2450		do.	moderate orange pink		iron oxide	do.
	2460		do.	grayish orange pink (5YR)			contains some pale red siltstone

General Petroleum - Greaser State #14-6 - Cont.

Form- ation	Depth (feet)	Thickness	Name	Color	Texture	Cement	Matrix	Comments
	2470		sandstone	grayish orange pink (5YR)	very fine			contains some pale reddish siltstone and some basalt fragments
	2480		do.	do.	do.			contains some pale red siltstone with some quartz
	2490		do.	moderate orange pink (10R)	fine			contains quartz and pale red siltstone
	2510		do.	do.	very fine			some basalt fragments and moderate red siltstone
	2520		do.	pale red (5R)	fine	iron oxide		quartz grains
	2530		do.	moderate orange pink (10R)	do.	lime		none dusky red siltstone and some pale yellowish green siltstone
	2550		do.	pale reddish brown	very fine			quartz grains and dusky red siltstone
	2560		do.	moderate orange pink	do.	lime		dusky red siltstone
	2570		do.	do.	do.			some light gray sandstone with quartz
	2580		do.	grayish orange pink (5YR)	do.	lime		well sorted, very friable
	2590		do.	do.	do.	weak lime		

General Petroleum - Greager State #14-6 - Cont.

Form- ation	Depth (feet)	Thickness	Rock	Color	Texture	Cement	Veget.	Comments
	2600		sandstone	grayish orange pink(51R)	very fine	lime		some light gray siltstone
	2610		do.	do.	do.	do.		some dusky red siltstone
	2620		do.	moderate orange pink(10R)	do.	weak lime		similar to 2260'
	2630		do.	do.	do.	do.		
	2640		do.	do.	do.	do.		
	2670		do.	do.	do.			some quartz and dusky red claystone
	2680		do.	do.	do.	iron oxide		do.
	2690		do.	do.	do.	do.		some dusky red claystone
	2700		do.	pale red	do.	lime		
	2717		siltstone	grayish red				contains pale red sandstone with lime and very light gray sandstone
	2730		sandstone	moderate orange pink(10R)	very fine	very weak lime		contains grayish red siltstone
	2740		do.	pale red (51R)	do.	lime		

General Petroleum - Greaser State #11-6 - Cont.

Formation	Depth (feet)	Thickness	Size	Color	Texture	Content	Notes	Comments
	2750		sandstone	moderate orange pink (10R)	very fine			
	2760		do.	do.	do.	weak lime		
	2770		do.	moderate orange pink	do.	iron oxide	contains grayish red siltstone	
	2780		do.	pale red (5R)	do.	lime	do.	
	2790		do.	do.	do.	do.	do.	
	2800		do.	pale red (10R)	do.		do.	
	2810		do.	do.	do.			
	2820		siltstone	pale red (5R)		lime		some basalt fragments
	2830		sandstone	pale red (10R)	very fine	do.		some grayish-red siltstone
	2840		do.	moderate orange red (10R)	do.	do.		basalt fragments and grayish-red siltstone
	2858		do.	pale red (5R)	do.	do.		grayish orange pink sandstone and grayish-red siltstone

General Petroleum - Greaser State #14-6 - Cont.

Formation	Depth (feet)	Thickness	Range	Color	Texture	Cement	Matrix	Comments
	2870		sandstone	pale red (10R)	fine	lime		contains dolomite and grayish red siltstone
	2880		do.	moderate orange pink(10R)	fine			
	2890		do.	moderate orange pink	very fine	weak lime		contains grayish-red siltstone
	2918		mudstone	grayish red		lime		very well sorted
	2930		sandstone	moderate orange pink(10R)	fine	iron oxide		some gypsum fragments, some grayish red mudstone, and basalt fragments
	2940		do.	do.	fine	do.		contains gypsum fragments, mudstone and basalt
	2950		gypsum	grayish orange pink(10R)	very fine			contains 2940' sandstone, basalt, mudstone of 2918'
	2960		mudstone	grayish red		lime		gypsum fragments and 2940' sandstone
	2970		do.	do.	very fine	do.		gypsum fragments, 2940' sandstone, and basalt
	2980		siltstone	do.	aphanitic	do.		gypsum fragments and 2940' sandstone
	3000		mudstone	pale red (5R)	very fine	do.		some siltstone

4044400
22

General Petrologues - Greager State #14-6 - Cont.

Formation	Depth (feet)	Thickness	Mass	Color	Texture	Cement	Matrix	Comments
	3010		mudstone	pale red (SR)		lime		crystalline, basalt
	3020		siltstone	grayish red		do.		2940' mudstone with lime
	3030		do.	do.				basalt fragments, crystalline fragments & 2940' sandstone with lime
	3040		do.	do.				contains limestone fragments
	3060		mudstone	pale red (SR)		lime		
	3070		do.	do.		do.		limestone fragments
	3080		siltstone	grayish red		do.		contains crystalline and mudstone
	3090		do.	do.		do.		some quartz crystals, quartz fragments
	3110		do.	do.		do.		some limestone fragments
	3120		do.	do.		do.		some claystone with lime
	3130		do.	do.		do.		some grayish-red claystone
	3140		do.	do.		do.		
	3150		do.	do.		do.		very fine grain sandstone
	3160		sandstone	pale red	very fine	do.		some basalt and siltstone

General Petroleum - Cragger State #14-6 - Cont.

Formation	Depth (feet)	Thickness	Name	Color	Texture	Comment	Notes
	3170		siltstone	grayish red			some basalt and sandstone
	3180		do.	do.		lime	limestone fragments
	3190		do.	do.		do.	do.
	3196		do.	do.		do.	like 2916', well sorted
	3220		limestone	light gray	very fine	do	some quartz crystals
	3230		do.	do.	do.	do.	some flint fragments and 1960' siltstone
	3240		siltstone	grayish red		do.	limestone fragments
	3250		do.	do.		do.	contains limestone with mica fragments
	3260		do.	do.		do.	limestone fragments
	3270		do.	do.		do.	do.
	3280		sandstone	moderate orange pink	very fine	iron oxide	limestone, siltstone, and gypsum
	3290		do.	pale red (10R)	do.	lime	quartz fragments
	3300		do.	pale red (5R)	do.	do.	
	3310		siltstone	grayish red		do.	some limestone fragments

General Petroleum - Creager State #14-6 - Cont.

Formation	Depth (feet)	Thickness	Name	Color	Texture	Bedding	Remarks
	3320		siltstone	grayish red		lime	
	3330		shale	do.		do.	some limestone fragments
	3347		siltstone	grayish red purple		do.	
	3360		shale	do.		do.	limestone fragments, quartz
Top of pre-Cambrian	3370		granite	moderate orange pink			
	3375		do.				contains 50% 3360' shale composed of biotite feldspar and quartz
	3385		do.				contains 35% 3360' shale
	3390		do.				
	3400		do.				50% 3360' shale
	3410		do.				
	3420		do.				
	3430		do.				

General Petroleum - Oregon State #14-6 - Cont.

Formation	Depth (feet)	Thickness	Name	Color	Texture	Content	Matrix	Comments
	3120		siltstone	grayish red		lime		
	3330		shale	do.		do.		some limestone fragments
	3347		siltstone	grayish red		do.		
	3360		shale	do.		do.		limestone fragments, quartz
Top of pre-Cambrian	3370		granite	moderate orange pink				contains 50% 3360' shale composed of biotite feldspar and quartz
	3375		do.					contains 10% 3360' shale
	3385		do.					
	3390		do.					50% 3360' shale
	3400		do.					do.
	3410		do.					
	3420		do.					
	3430		do.					



ARIZONA STATE LAND DEPARTMENT

Sundry Notices and Reports on Wells

Lease or ARIZONA
Permit No. O.P. 44404

Notice of intention to drill.....	X
Notice of intention to change plans.....	
Notice of date for test of water shut-off.....	
Report on result of test of water shut-off.....	
Notice of intention to re-drill or repair well.....	
Notice of intention to shoot.....	
Subsequent record of shooting.....	
Record of perforating casing.....	
Notice of intention to pull or otherwise alter casing.....	
Notice of intention to abandon well.....	
Subsequent report of abandonment.....	
Supplementary well history.....	

(Indicate above by check mark nature of report, notice or other data)

November 16 1948

Following is a (Notice of intention to do work) on land under (permit) described as follows:

(Report of work done)

(Lease)

Well No. Creager State #14-6, Sec. 6, T. 19 N., R. 23 E., S.R.B. & M.

Section

Township

Range

The well is located 330' feet (N) of South line and 330' feet (E) of West line of Section N. W. 1/4 Section

The elevation of the derrick floor above sea level is Est'd. 5750' 5720 per later report feet

DETAILS OF PLAN OF WORK

(State names of an expected depth to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other proposed work.)

13-3/8" O.D., 54.5#, grade J-55 cemented at 700 ft. (est'd top of Coconino sand - 1000')

7" O.D., 23# incl. 5000' of grade J-55 and 1000' grade N-80 on bottom cemented at 6000' (est'd top of Morton 4500'-6000')

Approved November 23, 1948

State Land Commissioner

Arizona State Land Department

Company General Petroleum Corp.

By Silas Brown Agent

by F. L. Madenorth - Chief Petroleum Engineer

Title

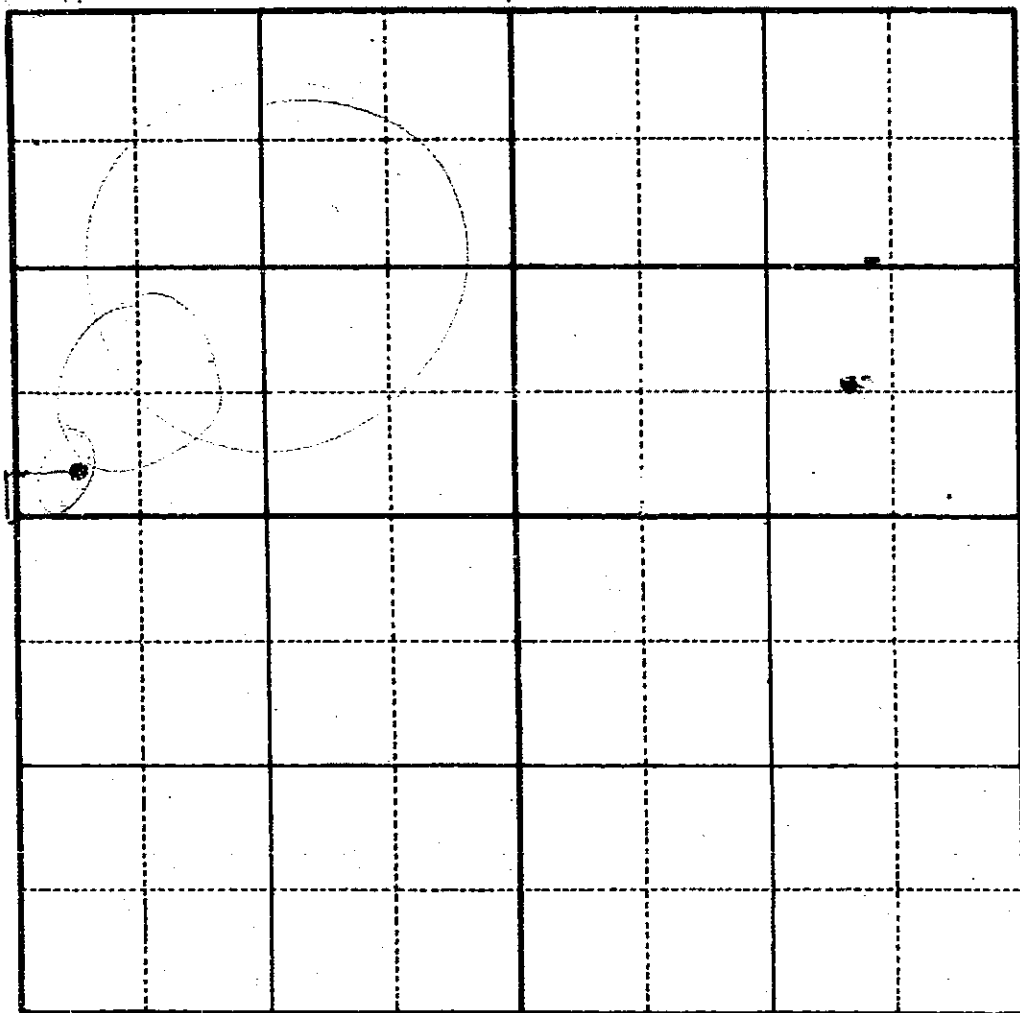
Address P.O. Box 2745, Phoenix, Ariz.

Address

NOTE:—Reports on this form to be submitted in triplicate to the Commissioner for approval.

OP 44404

Genl Petroleum Corp.
SEC. 6 T. 19N R. 23E



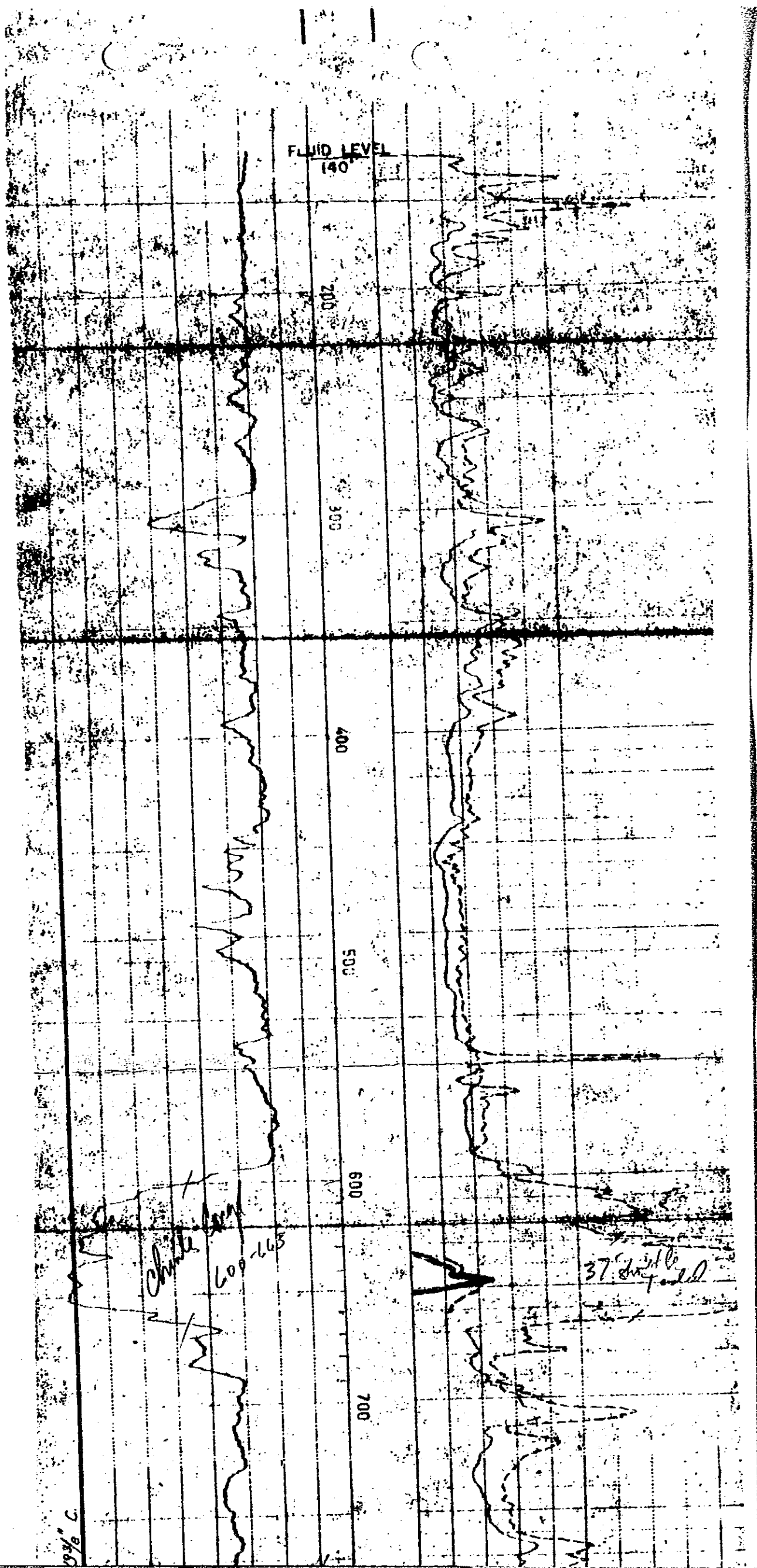
SCALE 1" = 1000'

ABSTRACTED _____ AREA _____

PLAT OF SURVEY FILED _____

SW₄SW₄NW₄

OP 44404



1937
795'

795' RUN 1

797' GEG
RUN 2



Sd. r. 1/2' to 1' sd. nod. 20'



Sd. some 20'

990

1080

Note similarity of this upper Coconino sandstone (NOT TESTED OR
TESTED IN THIS WELL) with same upper Coconino in Western
Nat. Gas English No. 1 log (1652-60) See Enc. 35.

Western Nat. Gas English No. 2, a south offset to No. 1 (no electric
log reported) produced reported 140 bbls. of 42 gravity oil per day
from same section

1100



Sd. r. 1/2' to 1' sd. nod. 20'



Sd. some 20'

1200

1300



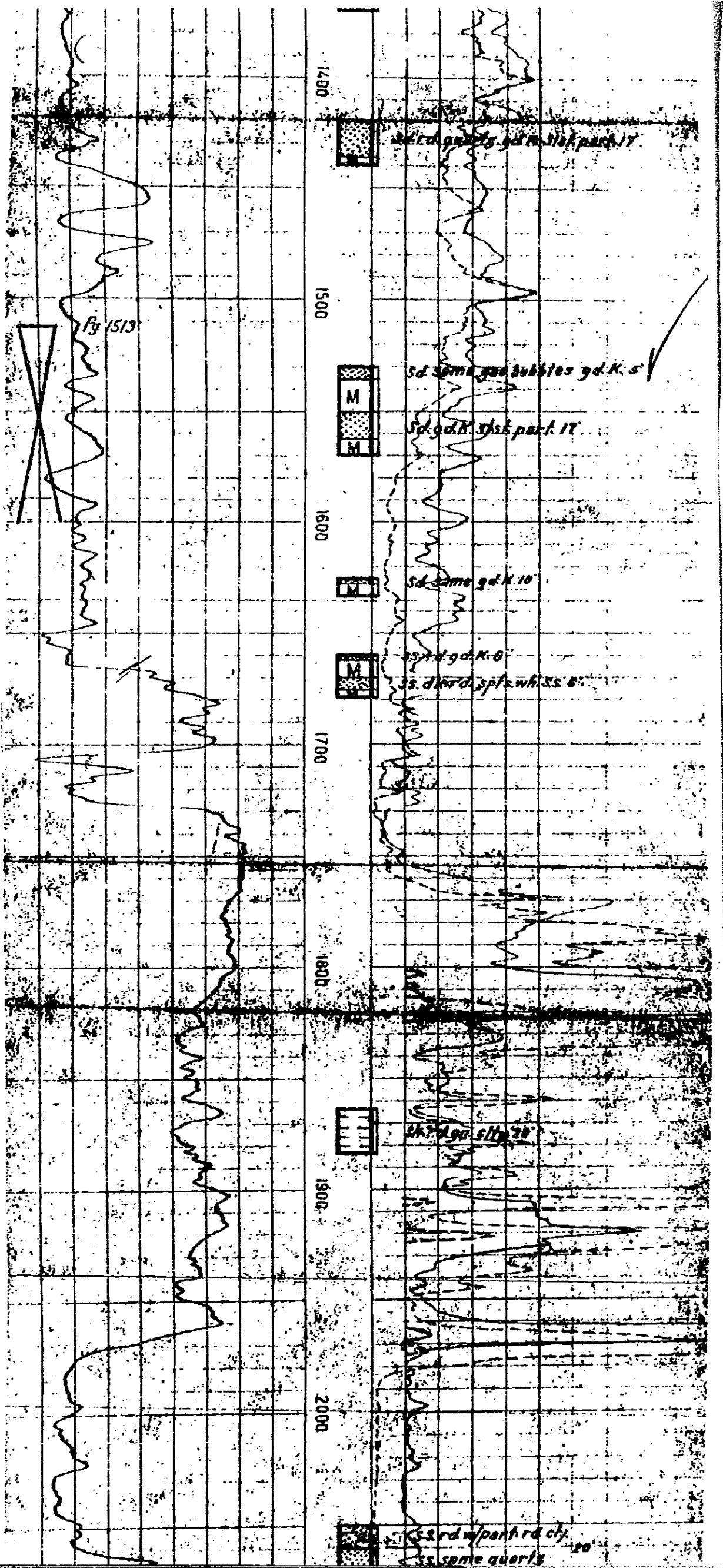
Sd. r. 1/2' to 1' sd. nod. 20'

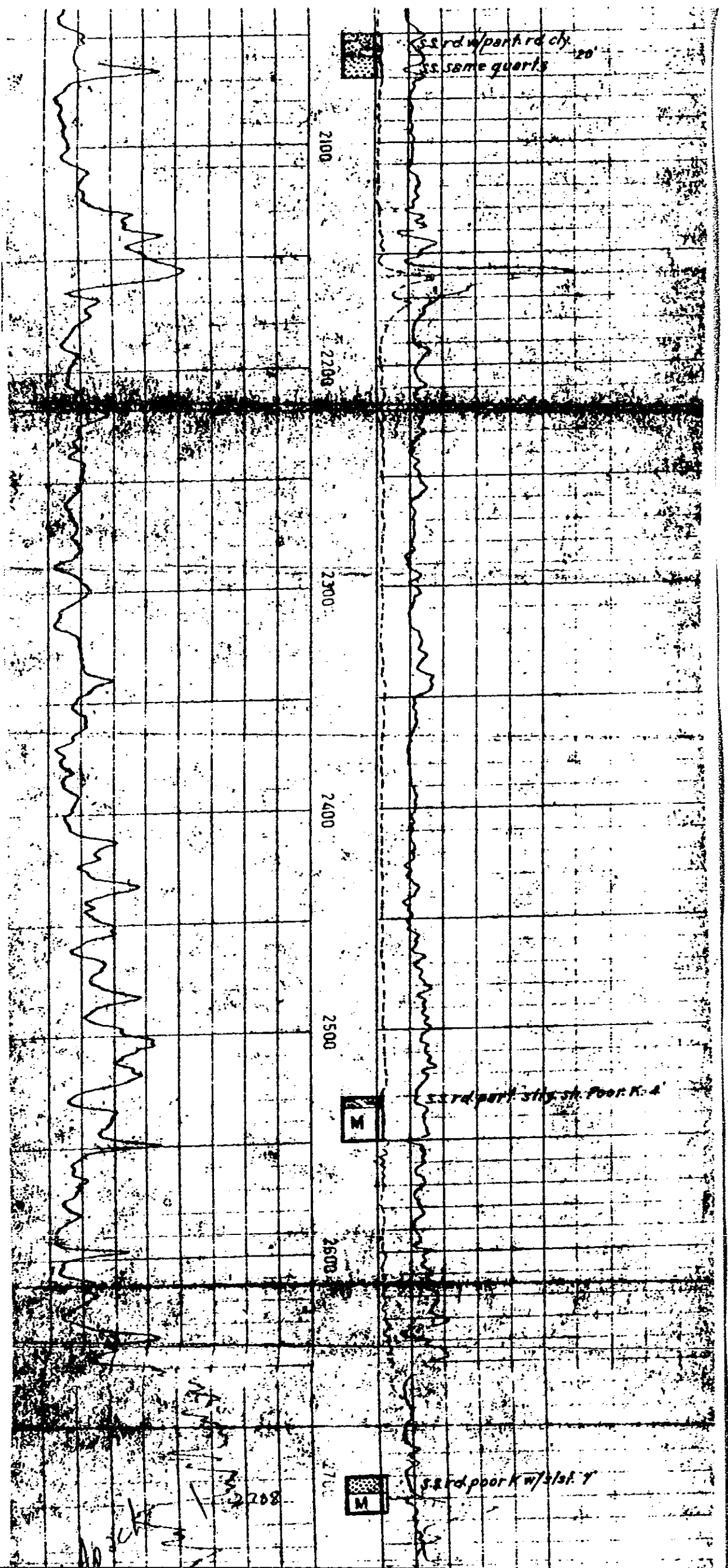
Sd. some 20' to 30' sd. fair K. 0'

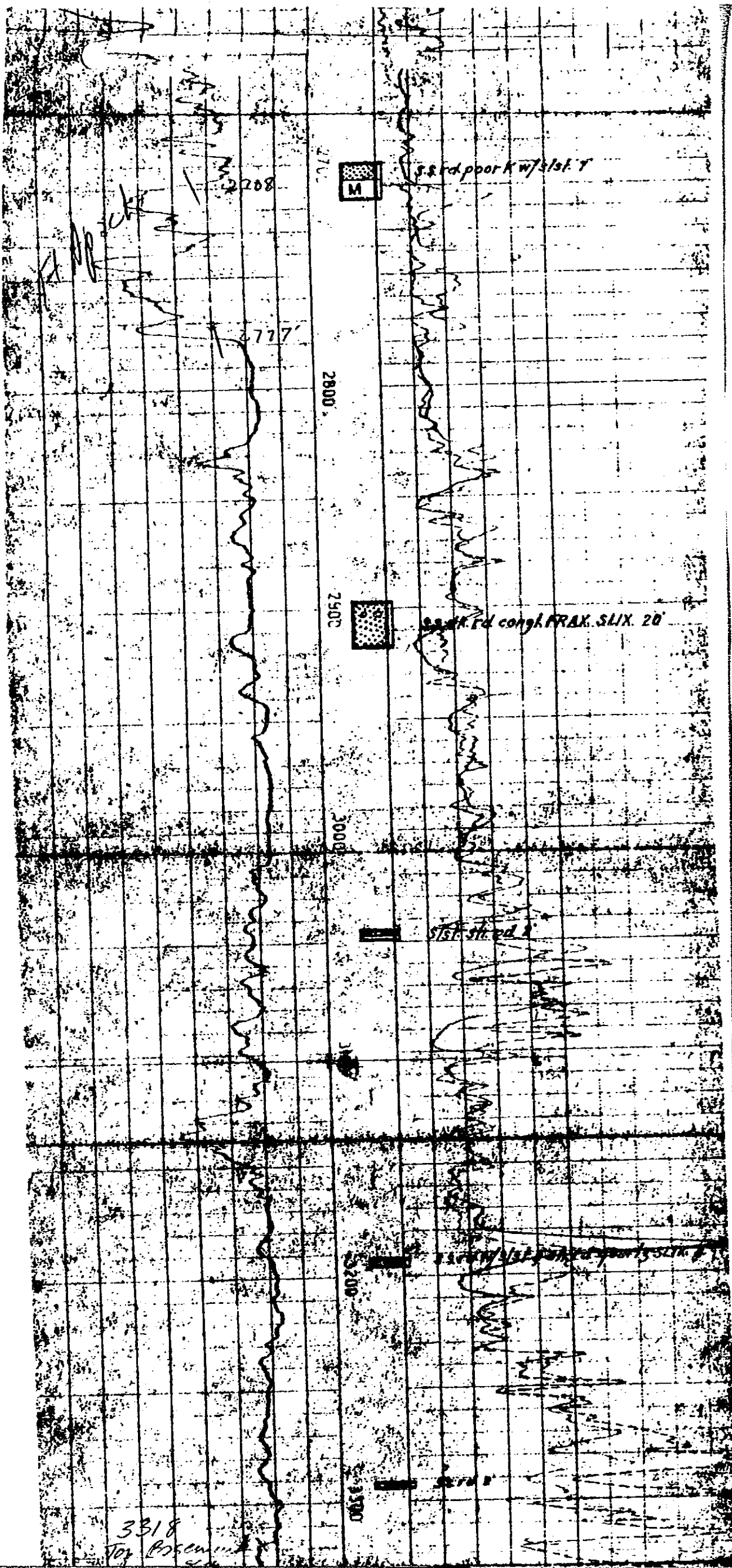


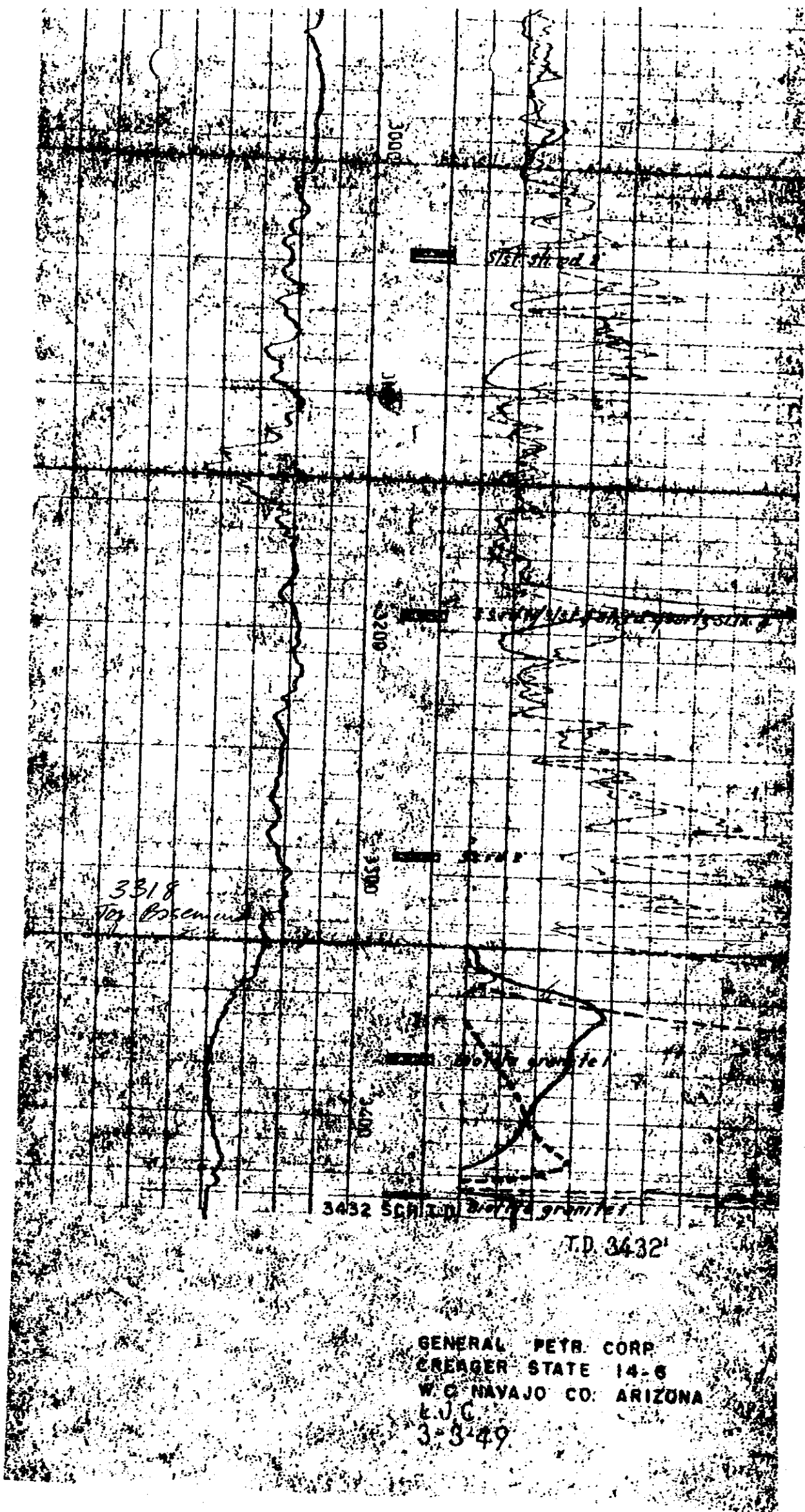
Sd. some 20' to 30' sd. fair K. 0'

1400









Bond No. L-67362

FIREMAN'S FUND

INDEMNITY COMPANY

HEAD OFFICE
SAN FRANCISCO

EASTERN DEPARTMENT
NEW YORK CITY

O & G Form 6

BOND OF OIL AND GAS PERMITTEE OR LESSEE

Arizona Code 1939, Article 13-14

BOND

KNOW ALL MEN BY THESE PRESENTS, That we, the undersigned, GENERAL PETROLEUM CORPORATION, of the County of Los Angeles, and State of California, as principal, and FIREMAN'S FUND INDEMNITY COMPANY, of the County of Los Angeles, State of California, as surety, are held and firmly bound to the State of Arizona, in the penal sum of ONE THOUSAND AND NO/100 (\$1,000.00) dollars, lawful money of the United States of America, for the use and benefit of the State of Arizona, and of any person holding a lease or other interest in the lands described in permit or lease No. OP-44404, or of any entrant or patentee of any portion of such lands covered by such lease which were entered or patented with the reservation of oil and gas deposits to the State of Arizona, or under mineral lease to such person on any portion of said lands. Such sum to be paid to the State of Arizona, for such payment well and truly to be made, we bind ourselves and each of us, and our heirs, executors, administrators and assigns, jointly and severally, by these presents.

Signed and sealed this 29th day of November in the year 1948.

The condition of the foregoing obligation is such that,

Whereas, the said principal, by instrument dated September 16, 1948, has been granted an exclusive right to prospect and drill for and remove oil and gas and other hydro-carbon, whether deposited with the oil and gas deposits, in or under the following described lands:

Lease No. OP-44404	SEC	TWP	RGE	ACRES
All	2	19N	22E	641.26
All	12	"	"	640.00
All	4	19N	23E	639.90
All	6	19N	23E	636.66
All	8	19N	23E	640.00
All	16	19N	23E	640.00
All	36	20N	22E	640.00
All	32	20N	23E	640.00
				5117.82

Under and pursuant to the provisions of Chapters 13 and 14, Arizona Code 1939, and,

Whereas, the said principal has by said instrument entered into certain covenants and agreements set forth therein,

NOW THEREFORE, if the said principal shall faithfully comply with all the provisions of the above described permit or lease, and hold harmless the State of Arizona, and all persons interested in such land, from any damage or injury by reason of the lawful act of said Permittee or Lessee, or in any damage resulting from the careless use of the deposits in said land, then the above and foregoing obligation is to be null and void, otherwise to remain in full force and effect.

Signed, sealed and delivered in the presence of

GENERAL PETROLEUM CORPORATION

By [Signature] Vice-President

By [Signature] Assistant Secretary

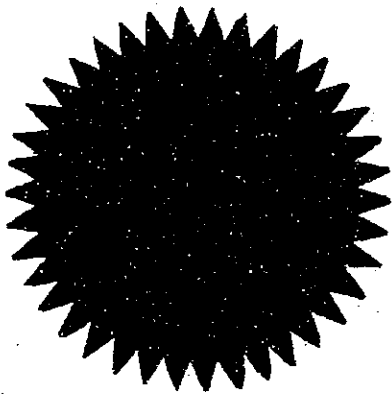
FIREMAN'S FUND INDEMNITY COMPANY

By [Signature] Attorney in Fact

The premium charged for this bond is
10 Dollars per annum.

FORM 2020

State of California, } ss.
COUNTY OF LOS ANGELES



On this 29th day of November, A. D., 1948,
before me, Vera T. Rathbun, a Notary Public in and
for the said County and State, residing therein, duly commissioned and sworn,
personally appeared J. L. MARTIN known to me
to be the Vice-President, and J. A. GRACE

known to me to be the Assistant Secretary of the GENERAL PETROLEUM
CORPORATION, the Corporation that executed the within instrument,
known to me to be the persons who executed the within instrument on behalf
of the Corporation therein named, and acknowledged to me that such Cor-
poration executed the same.

In ~~Witness~~ Whereof, I have hereunto set my hand and affixed my offi-
cial seal the day and year in this certificate first above written.

Vera T. Rathbun
Notary Public in and for said County and State

My Commission Expires Dec. 27, 1951.

CANCELLED

DATE _____

CP 44404

May 12, 1949

Mr. Frank B. Carter
General Petroleum Corporation
612 S. Flower Street
Los Angeles, California

Dear Mr. Carter:

Thank you very much for your note detailing corrections to be made on the electric log of the Greager well and the new corrected location.

Very truly yours,

L. A. Heindl
Geologist

LAH:kb

CP44404



GENERAL PETROLEUM CORPORATION
A SOCONY-VACUUM COMPANY

612 South Flower Street, Los Angeles 14, Calif.

April 8, 1949


Mr. L. A. Heindl, Geologist
State Land Department
State of Arizona
Phoenix, Arizona

Dear Sir:

Duplicate copies of the log, history and electric log of General Petroleum Corporation's Creager-State #14-6, Navajo County were recently sent to you. Please be advised that the elevation shown on the electric log is incorrect and should be 5720' (derrick floor) in conformance with that shown on the driller's log. Also, please note that the location of the well as shown on the electric log is the correct surveyed location and is slightly different from that shown in the log and history.

Please correct your records accordingly.

Very truly yours,


Frank B. Carter, Asst.
to Director of Exploration

FBC:jlm

April 9, 1949

Mr. Frank B. Carter
General Petroleum Corporation
612 South Flower Street
Los Angeles 14, Calif.

Dear Mr. Carter:

Thank you very much for the very complete information
forwarded us regarding your Greager-State #14-6 well.

As soon as the U.S.G.S. completes its sample analysis
of the cuttings from the well I will forward you the
copies you request.

Very truly yours,

L. A. Heindl
Geologist

LAH:kb

CP 44404



GENERAL PETROLEUM CORPORATION

A SOCONY-VACUUM COMPANY

612 South Flower Street, Los Angeles 14, Calif.

April 5, 1949

Mr. L. A. Heindel, Geologist
State Land Department
State of Arizona
Phoenix, Arizona

Dear Sir:

In accordance with your request, I am enclosing two copies of the log, history and electric log of General Petroleum Corporation well, Creager-State #14-6, sec. 6-19N-23E., Navajo County, Arizona.

Please forward to us a copy of the U.S.G.S. report on the well cutting samples, when available.

Very truly yours,

Frank B. Carter
Frank B. Carter, Assistant
to Director of Exploration

FBC:jlm
Encl.

RECEIVED
APR 6 1949

STATE LAND DEPT.
OF ARIZONA

GENERAL PETROLEUM CORPORATION

A SOCONY-VACUUM COMPANY



P. O. Box 1383
Durango, Colorado
March 11, 1949



Mr L. A. Heindl
State Land Department
Phoenix, Arizona

RECEIVED
MAR 14 1949
STATE L.
OF ARIZONA

Dear Leo:

Well - 1447

Re: your letter of March 8, 1949 I'm sorry I do not have much information on the well north of the White tanks. Newt Wolcott and I did visit the well when it was down to about 4100 feet and saw only granite and volcanic wash material. The "geologist" on the well said it was anhydrite, cap rock and everything else supposedly connected with oil and gas. I believe Newt can tell you more about the well than anyone as he was there two or three times I believe. I doubt if you will ever be able to correlate any of that valley fill stuff as it changes rapidly laterally.

As for the bottle of scotch that you lost to Perebee, I can only yell "SUCKER" and send you my sympathy - with reservation. The Kaibab formation peters out south of Holbrook and the edge trends southeast toward the White Mountains. On the other side of the old high that existed at the time of deposition is a limestone known as the San Andres Limestone with its source coming from the Southeast. The name Kaibab was used by our geologist so most of the Arizona geologists would realize its stratigraphic position. Now, Sucker, you paid a bottle of scotch for the San Andres Ls. which rates only a small beer. My advice to you is "learn your section and keep your BIG mouth shut" Again I offer you my sympathy. (T. S.)

Give my best to O.C., Lela, et.al.

With sympathy

Buzz
S. C. Brown

P.S. The Kaibab is not present
at Creager-State 14-8. T.S. - 6-194-23E

CP 44404

March 8, 1949

Mr. S. G. Brown
General Petroleum Corporation
Durango, Colorado

Dear Buzz:

Sam tells me that at one time or another you either collected or saw samples from some well drilled north of the White Tank Mountains.

I am trying to corral all information possible and would appreciate having either any notes that you took at that time or any comments regarding what you might remember of what you saw. Of course, if you have the samples, send them along. They won't do you any good where you are now.

I am having a hard time trying to pry that bottle of Scotch back from Ferebee. Hereafter remind me that your word isn't as good as your Kaibab.

Regards,

L. A. Heindl

LAH:kb

OP 44404

March 8, 1949

Mr. C. M. Wagner
Director of Exploration
General Petroleum Corporation
108 West 2nd Street
Los Angeles, California

Dear Mr. Wagner:

Mr. Robert Smart, your geologist on the Greager #14-6 Well northeast of Holbrook, has informed me that all information regarding this well will be forthcoming from your office.

The information that we would like to have consists of the complete driller's log with a record of the results of any tests taken, a copy of the electric log and a copy of the sample analysis of the well cuttings when completed. Mr. Smart has already forwarded the State's cuttings to us and they are being analyzed by USGS geologists in Tucson. We would be glad to forward to you a copy of their analysis when it is ready should you so desire.

I should like once again to thank you and your Company for the very fine cooperation that has been shown by you throughout the drilling of this well.

Very truly yours,

L. A. HEINDL
Geologist

LAH:kb

OP 44404

GENERAL PETROLEUM CORPORATION



A SOCONY - VACUUM COMPANY
108 WEST SECOND STREET
LOS ANGELES 12, CALIF.



February 9, 1949

RECEIVED
FEB 10 1949
LOS ANGELES

Mr. O. O. Williams
State Land Commissioner
Phoenix, Arizona

Dear Sir:

In compliance with your request for samples from
Greager State 14-6, I am forwarding under separate
cover a complete set. Samples were taken at 10
foot intervals, washed and placed in a brown, sample
envelope such as enclosed herein.

Envelopes are marked with the well name and depth.
Cores are indicated by core number, depth and recovery.

Very truly yours,

Robert R. Smart

Robert R. Smart

RRS:ans

OP 44404

GENERAL PETROLEUM CORPORATION



A SOCONY-VACUUM COMPANY
108 WEST SECOND STREET
LOS ANGELES 12, CALIF.



January 21, 1949

State of Arizona
State Land Department
Phoenix, Arizona

RECEIVED
JAN 24 1949
STATE OF ARIZONA

Attention: Mr. L. A. Heindl

Dear Mr. Heindl:

In accordance with instructions from Mr. C. M. Wagner, I enclose a direct print of the electric log, scale 1" = 50', of the first run made on our Creager State #14-6 well, drilling near Holbrook, Navajo County, Arizona.

Our normal procedure in supplying electric logs to State or Federal bodies is to file the composites after the total depth of the well in question is reached. However, temporary prints on each electric log run are usually furnished to those requesting them. Please consider the enclosed print of a "temporary" nature. We will furnish your office with temporary prints on any future electric log runs.

Please feel free to call on us for any data you may require on this well.

Yours truly,

F. L. Wadsworth
F. L. Wadsworth
Chief Petroleum Engineer

FLW:jlm
cc: R.R. Smart
File

No answer needed

CP 444061

DORSEY HAGER
CONSULTING GEOLOGIST

Jan 15-1949
Box 183 - Holbrook, Ariz.

Dear Mr. Kindle -

Howell

I received Allen's report and will go over it carefully. Williams' paper is new to me, and I'd like to see it - also what he calls plugs. He may have some of those ^{that} I find as flow remnants on his list. At any rate if the weather is good I'll show you some interesting features, and you can judge for yourself. - No doubt the lava had to come from somewhere but I don't see its source in the Basin.

If I do find that I've overlooked a bit I'll be the first to acknowledge it. It won't be the first time I've had to eat crow.

Is there enough demand for that paper of mine to justify another printing? If so I want to correct some errors (typographic) and several other minor points - footnotes at bottom as I thought was to be done. I didn't see page proof.

The General Pet. well gives us a ^{real} point for the Navajo Arch and also deepens the Eastward lobe of the Black Mesa Basin.

It doesn't affect the relative positions to any marked extent.

Brown thinks ^{the upper} 250 feet of the red beds above the Coconino to be Clinle and that 78' for the Shinarump is too much. I disagree.

It makes no difference in our structure anyway, but I cannot figure his reasoning. I can show 400 feet of Mesozoic at Joe City and 350' at Adamana with no Coconino showing in the well there. Sincerely yours
Dorsey Hager

January 14, 1949

Mr. Robert R. Smart
General Petroleum Corporation
P. O. Box 277
Holbrook, Arizona

Dear Bob:

Thanks for the information and a batch of monthly operation report forms are herewith enclosed, also the Hollo Ellis report. Ellis has been popping off to the newspapers and the wire services and radio have picked his statements up and given them considerable local circulation. Did you notice anything about his statements regarding Cochise County oil and his oligocene shoreline in the newspapers up your way?

You need not re-make the December report as the letter will be filed along with later reports.

I am writing C. M. Wagner for the Schlumberger to 795 feet.

If anything gets really hot let me know so that, if at all possible, I will have time to reach Holbrook.

Very truly yours,

L. A. Heindl

LAH:bg

CP 44404

January 14, 1949

Mr. Dorsey Hager
Holbrook, Arizona

Dear Mr. Hager:

Enclosed please find a copy of the Holm report and any comments, suggestions, criticisms, etc. will be greatly appreciated. I have just finished re-reading the report and have begun roughing out an outline. I'll be able to use every bit of advice and assistance that I can garner.

Out of curiosity I looked up a 1936 GSA report by Dr. Howell Williams on the Hopi Buttes area. He admits that a great many structures out there are probable lava flows but does specify some as being necks. Will bring a copy of the report north with me on the chance that you might not be acquainted with it and it should at least add interest to whatever observations we may make in the field, weather permitting. I'll probably hit Holbrook immediately after the first of February and hope that you will be there at the time.

Thanks again.

Very truly yours,

L. A. Heindl

Enc.
LAH:ld

No answer yet.

OP 44404

January 14, 1949

Mr. C. M. Wagner
Director of Exploration
General Petroleum Corporation
108 West Second Street
Los Angeles 12, California

Dear Mr. Wagner:

Mr. Robert R. Smart, geologist at your Creager #14-6 well near Holbrook, Arizona, has shown me a Schlumberger log of the well down to 795 feet. The State Land Department is anxious to keep as complete a file as possible on exploratory oil wells and we would appreciate a copy of the log for our files.

Mr. Smart has indicated that your company desires to only give out well hole depth at this time. Any information you forward us will be kept strictly confidential until such time as your company releases it.

We would like you to know that we appreciate the splendid cooperation that we have been receiving from your company and everyone connected with the well.

Yours very truly,

LAH:bg

L. A. Heindl

OB 44404

GENERAL PETROLEUM CORPORATION



A SOCONY - VACUUM COMPANY

108 WEST SECOND STREET

LOS ANGELES 12, CALIF.



January 11, 1949

Mr. Leo Heindl
Geologist
State Land Department
Phoenix, Arizona

Dear Leo:

Sorry that this is not on the correct form, as I find I do not have any Monthly Operation reports. If this does not suffice, send the forms and I'll complete the report on the proper form. Briefly, however, this is the story of Greager State #14-6 for the month of December 1948.

Rigging up was completed and the well was spudded on December 17, 1948. Circulation was lost at 647 feet. Surveys were run at 578 feet with drift of $0^{\circ} 15'$ from the vertical and at 759 feet with drift of $0^{\circ} 5'$. A Schlumberger electric log was run to 795. $13 \frac{3}{8}$ casing was set with 550 sacks of cement on December 26, 1948. Weld on casing was found O.K. when tested with 3000 pound water pressure.

Total depth on December 31, 1948 was 1015 feet.

Very truly yours,

Robert R. Smart

Robert R. Smart
Geologist

RRS:ans

P.O. Box 277
Holbrook Ariz

RECEIVED
JAN 13 1949
STATE LAND DEPT
OF ARIZONA

OP 44404

December 9, 1948

Mr. P. R. Isham, Special Agent
Firemen's Fund Indemnity Co.
602 Title and Trust Building
Phoenix, Arizona

Dear Sir:

This will acknowledge receipt and thank you for
the General Petroleum Corporation Bond of Oil and Gas
Permittee, L-67862.

Sincerely yours,

O. C. Williams
State Land Commissioner.

bg

cc- General Petroleum Corporation

~~100 West Second Street~~ *Box 2745*
~~Los Angeles, California~~ *Phoenix*

CP 444 04

FIREMAN'S FUND INDEMNITY COMPANY

HEAD OFFICE - SAN FRANCISCO

ARIZONA SERVICE OFFICE

602 TITLE AND TRUST BUILDING

PHOENIX, ARIZONA

PHILLIPS K. ISHAM, SPECIAL AGENT

TELEPHONE 4-1447

December 7, 1948

Mr. O. C. Williams
State Land Commissioner
Capitol Building Annex
Phoenix, Arizona

Dear Sir:

L-67862 - GENERAL PETROLEUM CORPORATION
Bond of Oil and Gas Permittee

We are enclosing the captioned bond for proper filing with
your department.

Very truly yours,

FIREMAN'S FUND INDEMNITY CO.

P. K. Isham

P. K. Isham, Special Agent

PKI/rhc
Enc.

RECEIVED
DEC 8 1948

STATE LAND
OF ARIZONA

OP 444 04

GENERAL PETROLEUM CORPORATION



A SOCONY - VACUUM COMPANY

108 WEST SECOND STREET

LOS ANGELES 12, CALIF.

November 17, 1948



RECEIVED
NOV 18 1948

STATE LAND DEPT.
OF ARIZONA

Mr. O. C. Williams
Arizona State Land Commissioner
Phoenix, Arizona

Dear Mr. Williams:

You will find enclosed three copies of Oil and Gas Form No. 1, notice of intention to drill on State Permit O.P. 44404. When I talked with Mr. Bone over the telephone last week I believe I told him that the location, as picked off the geologic map, would fall on Santa Fe land. This is not the case and, therefore, a bond may be required. I presume Mr. Meek of our Right-of-Way department has talked with your people about that matter.

We would appreciate it if you would send copies of replies to notices and other correspondence directly affecting the well to:

E. J. Carnahan, Division Superintendent
2525 East 37th Street
Los Angeles

F. L. Wadsworth, Chief Petroleum Engineer
108 West 2nd Street
Los Angeles 12

R. O. Swayze, Manager California Operations
108 West 2nd Street
Los Angeles 12

The three extra copies of the enclosed notice are for this purpose. The original should go to Mr. Brown as the official file will be in his possession, or in the possession of some other Arizona agent who may succeed him.

Yours very truly,

R. O. Swayze

R. O. Swayze
Manager California Operations -
Production Department

*S. C. Brown
Box 2745
Phoenix*

OP 44404 ROS:EB
Encs.

CHANGE OF ADDRESS.... Effective February 28, 1949

Arizona

GENERAL PETROLEUM CORPORATION

State OP-44402
" OP-45328-S
" OP-44404
" OP-45308
" OP-44935
" OP-44397

offices will be established in the

GENERAL PETROLEUM BUILDING

612 South Flower Street
Los Angeles 14, California

for the following departments

ACCOUNTING	INSURANCE	PURCHASING
ADVERTISING	LAND	REFINING
AUDITING	LEGAL	RIGHT OF WAY
COMPTROLLER	MANUFACTURING	SALES (EXECUTIVE)
CONTRACT	MARKETING (EXECUTIVE)	SALES PROMOTION
CREDIT	MEDICAL	SECRETARY
ECONOMICS	PATENTS	SOUTHERN CALIFORNIA
EXECUTIVE	PERSONNEL	SALES ACCOUNTING
GAS	PIPE LINE	SUPPLY - EXCHANGE
GENERAL COUNSEL	PRESIDENT	TAX
GEOLOGICAL	PRODUCTION	TREASURER
GEOPHYSICAL	PUBLIC RELATIONS	VICE PRESIDENTS
INDUSTRIAL RELATIONS		

Offices previously occupied by these departments in the -

HIGGINS BUILDING
108 W. 2nd ST.

NELSON BUILDING
4th AND BROADWAY

NINTH & HILL BUILDING
315 WEST 9th STREET

GENERAL PETROLEUM CORP.
2401 E. 27th STREET

will be vacated effective the same date.

NEW MAIL ADDRESS:

P. O. Box 2122
Terminal Annex
Los Angeles 54, California

NEW TELEPHONE:

MAdison 6-5711

OP 44404